DOCUMENT RESUME

ED 363 205 HE 026 815

TITLE	Trends Plus: U.S. Medical School Applicants, Matriculants, Graduates 1992.
INSTITUTION	Association of American Medical Colleges, Washington, D. C.
PUB DATE	May 93
NOTE	47p.
AVAILABLE FROM	Association of American Medical Colleges, 2450 N. Street, N.W., Washington, DC 20037-1129 ($19).
PUB TYPE	Statistical Data (110) -- Reports - Research/Technical (143)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	*Academic Achievement; *Career Choice; Comparative Analysis; Enrollment Trends; Grade Point Average; Graduation; Higher Education; *Medical Education; Minority Groups; Paying for College; Physicians; Professional Education; Specialization; Statistical Data; Student Attrition; *Student Characteristics; *Trend Analysis
IDENTIFIERS	Diversity (Student); Medical College Admission Test; National Resident Matching Program

ABSTRACT

This report provides statistical data and charts concerning trends in undergraduate medical education over the past decade. It presents trends in grade point averages (GPAs); in Medical College Admission Test (MCAT) scores for premedical school applicants and matriculants; and provides information on applicant and matriculant characteristics, academic progress, graduation rates, National Residency Match rates, specialty choice, and practice and career intentions. In addition, the report shows the contributions of underrepresented minority graduates to practice in underserved areas and the influences of rising educational debt. Findings include the following: (1) numbers of medical school applicants and matriculants are rising; (2) medical schools are becoming more racially and ethnically diverse; (3) rising applicant pools since 1988 have allowed schools to select applicants with high premedical GPAs; (4) MCAT scores vary significantly across racial-ethnic groups; (5) the majority of dismissals and withdrawals are occurring during the first 2 years of medical school; (6) dismissals and withdrawals vary with MCAT scores, GPAs, and student characteristics; (7) low MCAT scores are associated with low match rates; (8) there is a declining interest in generalism as well as in socioeconomically-deprived settings; (9) educational debt inflation outstrips tuition increases; and (10) there is a high interest of minority graduates for practice in inner-city and socioeconomically-deprived areas. (GLR)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 363 205

AAMC ASSOCIATION OF AMERICAN MEDICAL COLLEGES

TRENDS plus

U.S. Medical School Applicants, Matriculants, Graduates 1992

HE 026 815

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Association of American Medical Colleges
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

Division of Educational Research and Assessment
May 1993

BEST COPY AVAILABLE

AAMC ASSOCIATION OF AMERICAN MEDICAL COLLEGES

TRENDS plus

U.S. Medical School Applicants, Matriculants, Graduates 1992

Division of Educational Research and Assessment
Section for Educational Research

May 1993

Additional copies of ***T R E N D S plus: U.S. Medical School Applicants, Matriculants, Graduates, 1992*** may be obtained, at the prices shown below, from:

Association of American Medical Colleges
Attention: Membership and Publication Orders
2450 N Street, N.W.
Washington, D.C. 20037-1129
(202) 828-0416

Single copy $15.00 plus postage and handling (see chart below)

All orders under $100.00 require prepayment. Orders of $100.00 or more, accompanied by an institutional purchase order, may be invoiced. You also may charge your purchase to your Visa or MasterCard by calling the telephone number listed above. Please do not send cash. Prices are subject to change without notice. **Allow 4 to 6 weeks for delivery, from date of receipt of order.**

Total Order Price	**Shipping and Handling Charges***		
	U.S.	**Mexico & Canada**	**Other Foreign**
$15.00	$4.00	$5.00	$5.00/book
$30.00	$6.00	$7.00	$5.00/book
$45.00	$8.00	$9.00	$5.00/book
$60.00 - 75.00	$10.00	$11.00	$5.00/book
$90.00 - 195.00	$17.00	$18.00	$5.00/book

*Orders over $195.00, add 8% to total order

Division of Educational Research and Assessment

Association of American Medical Colleges
2450 N Street, N.W.
Washington, D.C. 20037
(202) 828-0685

May 1993

Staff, Division of Educational Research and Assessment

Donald G. Kassebaum, M.D.
Vice President

Philip L. Szenas, M.A.
Senior Research Associate

Kathryn A. Caldwell, M.A.
Research Associate

Alexis L. Ruffin, M.S.
Research Associate

Racheal Allen
Administrative Assistant

Foreword ii

Table of Contents iii

Applicants and Matriculants

Demographic Variables 1
Premedical Grades 9
MCAT Scores 12

Academic Progress, Graduation, and Residency Match Results

Academic Progress 21
Graduation Rates 22
Residency Match Results 24

Graduates' Specialty Choices and Practice Intentions

Specialty Choices 29
Practice Settings 34
Serving Socioeconomically-deprived Areas 35
Research Plans 36
Practice Intentions 37
Educational Debt 39

Acknowledgement

The Division of Educational Research and Assessment is especially grateful for the help provided by staff in the sections for Operational Studies, Student Services, and Computer Services, and the divisions of Institutional Planning and Development, and Minority Health, Education and Prevention. This publication is a tribute to the technical skills and insights shared by AAMC colleagues.

Copyright © 1993 by the Association of American Medical Colleges. All material subject to this copyright may be photocopied for the noncommercial purpose of scientific or educational advancement. Printed in U.S.A.

Foreword

This is the 1992--and first--edition of ***TRENDS plus--U.S. Medical School Applicants, Matriculants, Graduates, 1992*** the successor to TRENDS which was published earlier this year for the last time.

TRENDS plus goes beyond enumeration of the premedical GPAs and MCAT scores of medical school applicants and matriculants, and serves as a compendium of nationwide data on applicant and matriculant characteristics, academic progress and graduation rates, NRMP match rates, specialty choice, and practice and career intentions.

We have assembled in ***TRENDS plus*** a description of the process and product of undergraduate medical education over the past decade. Beyond that, we have tried to depict some of the relationships important to the achievement of institutional and national goals in medical education: students' antecedents and academic progress and graduation; factors influencing residency match rates; specialty choice and practice determinants; the contributions of underrepresented minority graduates to practice in underserved areas; the influences of rising educational debt.

Our hope is that ***TRENDS plus*** will provide an information and outcomes framework reflecting the continuum of undergraduate medical education.

We welcome questions and advice about content and emphasis of greatest value to our readers.

Donald G. Kassebaum, M.D.
Vice President
Division of Educational Research and Assessment

Applicants and Matriculants

Demographic Variables

Sources and Enrollment of 1992 Matriculants, by State 1

Numbers of Medical School Applicants and Matriculants, 1960-1992 2

Applicants and Matriculants, by Gender 3

Race-Ethnicity of Applicants and Matriculants 4

Medical School Matriculants, by Race-Ethnicity and Gender 5

Age Trends of Applicants and Matriculants 6

Hometown Size of Applicants and Matriculants 7

Undergraduate Majors of Applicants and Matriculants 8

Premedical Grades

Premedical Grades of Applicants and Matriculants 9

Premedical Science Grades of Applicants and Matriculants, by Race-Ethnicity 10

Premedical Overall Grades of Applicants and Matriculants, by Race-Ethnicity 11

MCAT Scores

Trends in MCAT Scores 12

Conversion from 1977 Version to 1991 Revised Medical College Admission Test (MCAT) 14

1992 MCAT Scores 15

Academic Progress, Graduation, and Residency Match Results

Academic Progress 21

Graduation Rates 22

National Residency Match Results 24

Graduates' Specialty Choices and Practice Intentions

Specialty Choices

Trends in Specialty Certification Plans 29

Trends in Generalism 32

Influence of Student Characteristics on Planned Specialty Certification 33

Practice Settings

Practice Intentions 34

Serving Socioeconomically-Deprived Areas

Plans to Practice in Socioeconomically-deprived Areas 35

Research Plans

Graduates' Planned Research Involvement 36

Practice Modes

Trends in Graduates' Mode of Intended Practice 37

Graduates' Characteristics and Intended Practice and Careers 38

Educational Debt

Trends in Graduates' Educational Debt 39

Educational Debt and Planned Specialty Certification 40

Educational Debt and Intended Practice Settings 41

Minority Graduates' Intended Practice in Socioeconomically-deprived Areas 42

Applicants and Matriculants

- Demographic Variables
- Premedical Grades
- MCAT Scores

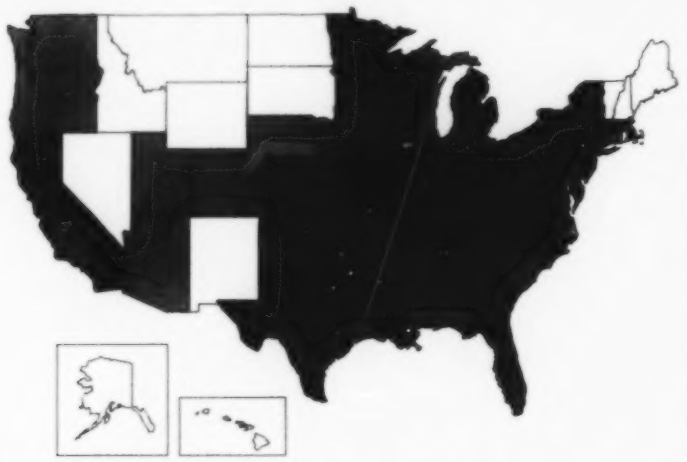


Figure 1. Hometown distribution, by state, of 1992 matriculants. (A *matriculant* is an accepted applicant who is registered and enrolled for the first time in the first-year class of the school). *Source:* AAMC American Medical College Application Service (AMCAS).

Medical school matriculants are concentrated in eastern U.S.

Figure 1 shows the hometown distribution by state of 1992 medical school matriculants. The distribution mirrors that of the general population in the U.S. and emphasizes that the majority of matriculants comes from the eastern part of the country. Figure 2 shows that the distribution of matriculants in medical schools is even more predominantly eastern.

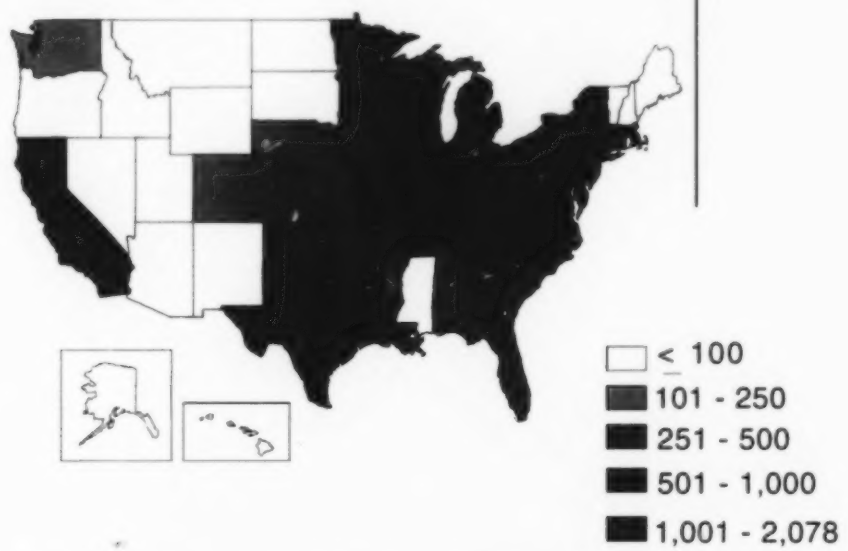


Figure 2. Distribution of 1992 matriculating classes in medical schools. *Source:* AAMC 1992 Fall Enrollment Questionnaire.

Medical school applicant pool on the rebound

Figure 3 shows that, after peaking at 42,624 in 1974, the applicant pool declined steadily to 26,721 in 1988. In 1989, the pool increased slightly, followed by three years of more dramatic increases. In 1992, there were 37,410 applicants, an increase of 12.3% from the year before.

Figure 4 illustrates the nationwide increase in medical school applicants between 1987 and 1992. All states except Wyoming showed increases.

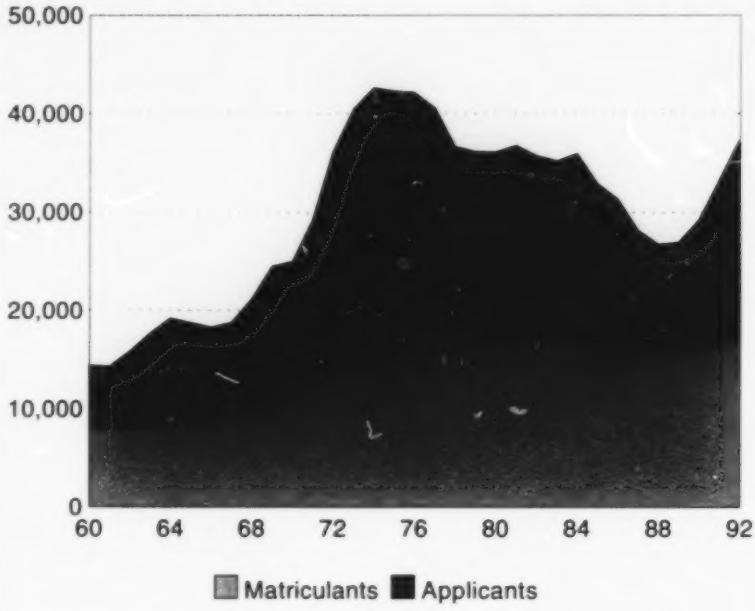


Figure 3. Number of medical school applicants and matriculants, 1960-1992. (An *applicant* has completed all application documents needed for consideration by the admission committee of the schools to which he/she applies.) *Source:* AAMC Division of Educational Research and Assessment.

Figure 4. Percentage change in medical school applicants from 1987 to 1992, by state of residence. (Based on applicants' state of legal residence.) *Source:* AAMC Division of Educational Research and Assessment.

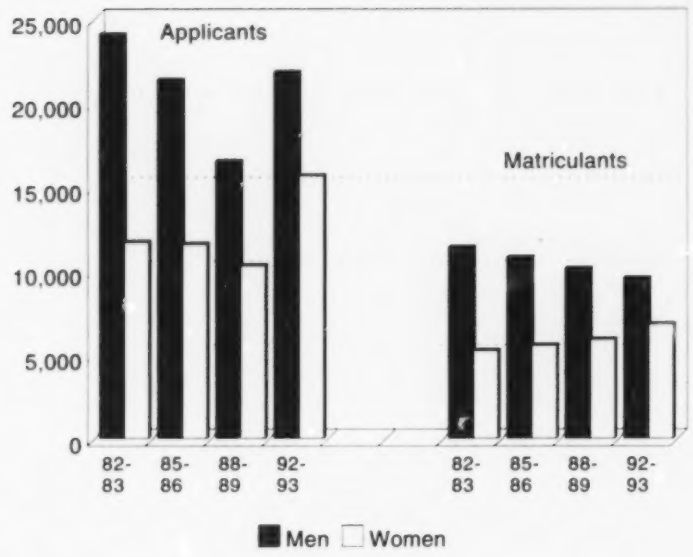


Figure 5. Number of medical school applicants and matriculants, by gender. *Source:* AAMC Division of Educational Research and Assessment.

Proportion of women applicants and matriculants continues to rise

Figure 5 shows that the numbers and percentages of women applicants and matriculants have increased substantially over the last decade: The percentage of women rose from 32.7% to 41.8% between 1982-83 and 1992-93, and the percentage of women matriculants increased from 31.4% to 41.6%.

Medical schools becoming more racially and ethnically diverse

Figure 6 shows the racial-ethnic breakdown of medical school applicants and matriculants over the past decade. The proportion of white applicants and matriculants has declined over this period, while the proportion of black-Americans and other underrepresented minorities (URM), Asians and other minorities has increased.

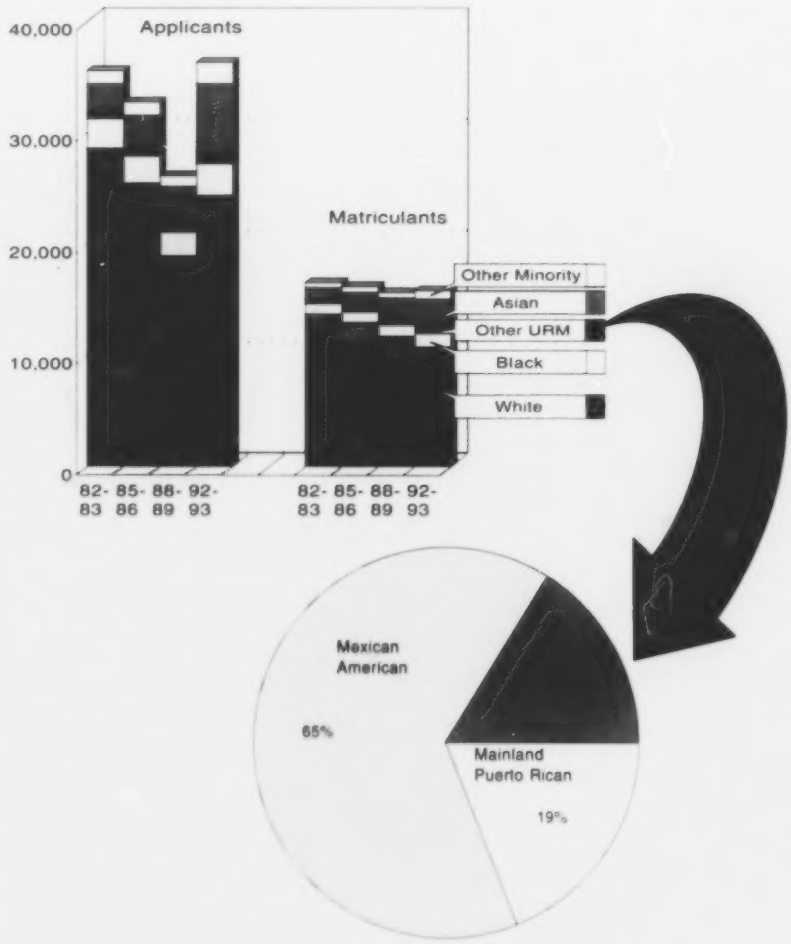


Figure 6. Medical school applicants and matriculants by race-ethnicity.*
Source: AAMC Division of Educational Research and Assessment.

**Underrepresented minorities* (URM) are those underrepresented in medicine: black-American; American Indian or Alaskan native; Mexican American; and mainland Puerto Rican. *Other minorities* include Commonwealth Puerto Rican and other Hispanics. *Asians* include Chinese, Filipino, Hawaiian, Korean, Vietnamese, Japanese, Indian or Pakistani, other Pacific Islander, other Asian, and Southest Asian other than Vietnamese.

Gender distribution varies by race-ethnicity

Figure 7 shows the gender ratio for each racial-ethnic group. In all racial-ethnic groups other than underrepresented minorities, men predominate. Among black-Americans, the reverse is true, and 61% of matriculants are women. There is a higher proportion of women in the other underrepresented minority group (45%) and other minority group (44%) than in the white and Asian groups (40%). The proportions mirror those of medical school applicants.

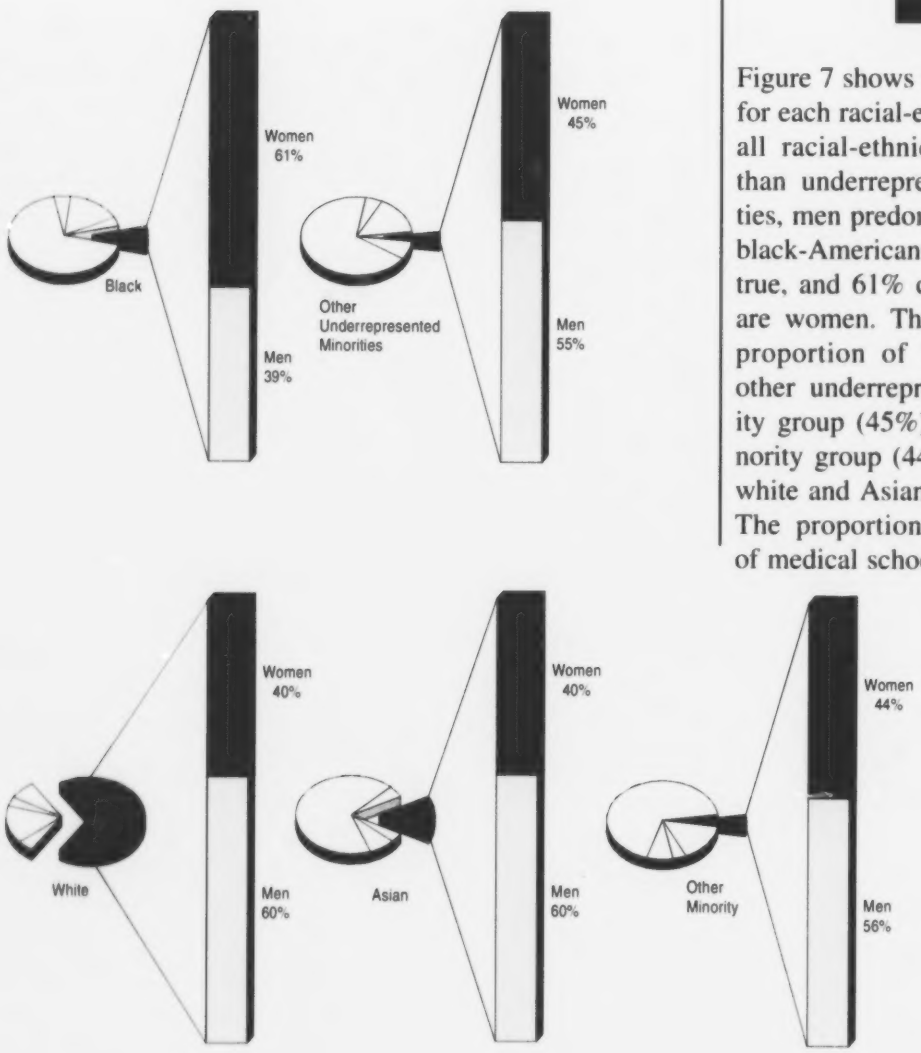


Figure 7. Medical school matriculants (1992-93) by race-ethnicity and gender. (Race-ethnicity as defined in Figure 6.) *Source:* AAMC Division of Educational Research and Assessment.

Medical school matriculants are getting older

Figure 8 shows the trends in the ages of medical school applicants and matriculants. The number of matriculants 32 years of age and older increased over this period (from 489 in 1982-83 to 795 in 1992-93), driving the mean age of matriculants from 24.4 in 1982-83 to 24.7 in 1992-93.

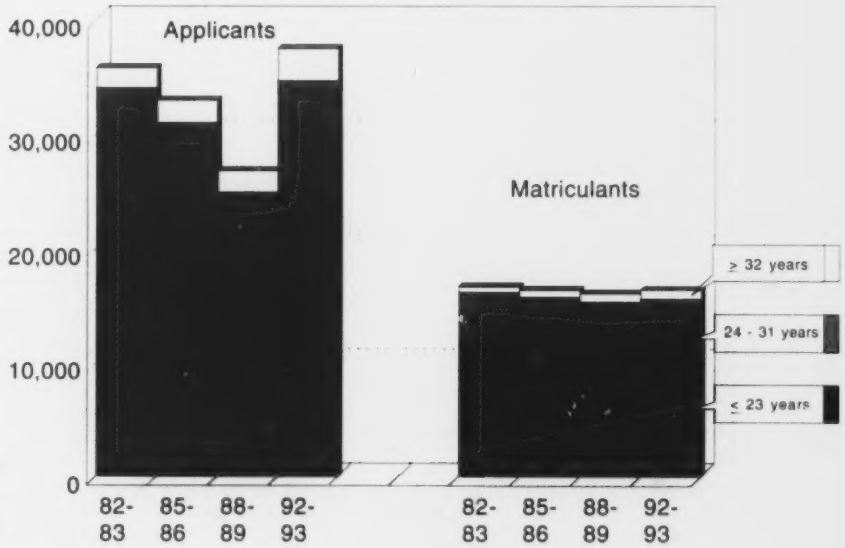


Figure 8. Number of medical school applicants and matriculants, by age.
Source: AAMC Division of Educational Research and Assessment.

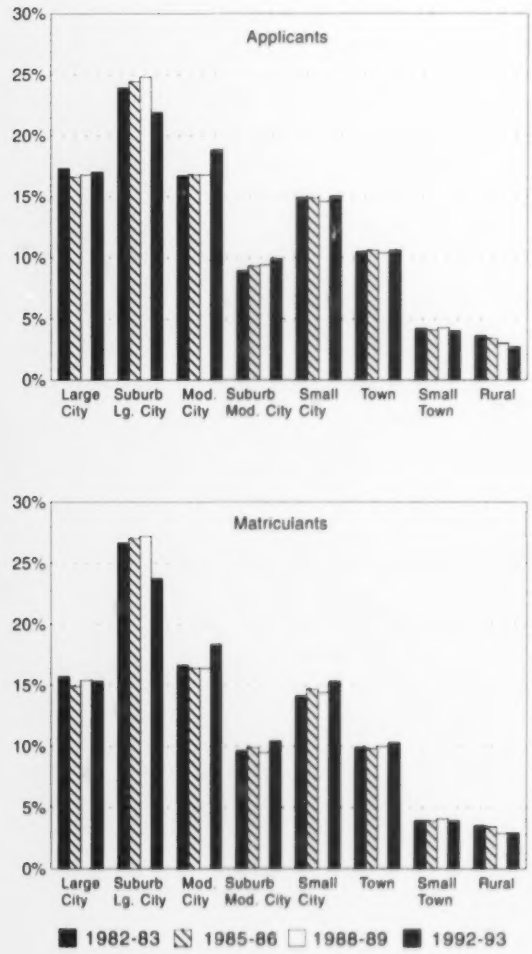


Figure 9. Percentages of medical school applicants and matriculants, by hometown size*. *Source:* AAMC Division of Educational Research and Assessment.

**Large city*, population of 500,000 or more; *moderate-size city*, population 50,000 to 500,000; *small city*, population 10,000 to 50,000; *town*, population 2,500 to 10,000; *small town*, population less than 2,500; *rural* includes rural and unincorporated areas.

More applicants and matriculants from communities of moderate and small size

Figure 9 shows the trends in hometown size of medical school applicants and matriculants. The patterns for applicants and matriculants have been similar: The percentages of applicants and matriculants from moderate-size cities, suburbs of moderate-size cities, and small cities are increasing, while those from the suburbs of large cities and from rural areas are declining.

Small increases in social sciences and humanities backgrounds of medical students

Figure 10 shows the decline in physical sciences background and small increases in applicants and matriculants with undergraduate majors in the social sciences and humanities.

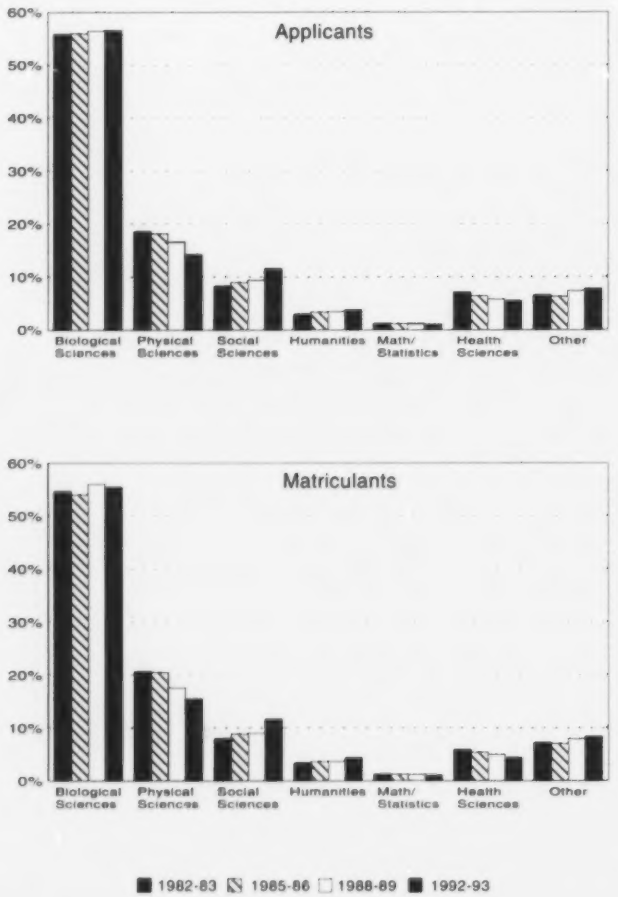


Figure 10. Undergraduate majors* of medical school applicants and matriculants. *Source:* AAMC Division of Educational Research and Assessment.

**Biological Sciences*: agriculture, anatomy, biochemistry, biology, biomedical science, botany, chemistry and biology, genetics, human biology, microbiology, neuroscience, nutrition, pharmacology, pathology, psychobiology, physiology, other biological science, and zoology. *Physical Sciences*: aerospace engineering, architecture, astronomy, biomedical engineering, biomathematics, biophysics, civil engineering, chemical engineering, chemistry, computer science, electrical engineering, engineering, environmental science, forestry, geography, geophysics, geology, meteorology, mechanical engineering, natural science, oceanography, other physical science, and dual science majors. *Social Sciences*: anthropology, black studies, business, communication, economics, education, home economics, history, international relations, law, military science, journalism, physical education, political science, psychology, sociology, social science, and social work. *Humanities*: art, classics, english, foreign language, humanities, literature, linguistics, library science, music, philosophy, religion, speech, and theater arts. *Math and Statistics*: accounting, mathematics, and statistics. *Health Sciences*: hospital administration, medical technology, nursing, occupational therapy, optometry, pharmacy, physical therapy, public health, and premedical. *Other*: dual major nonscience, dual major science/nonscience, general science, general studies, honors program, interdisciplinary studies, no major, other, and preprofessional.

Figure 11 shows the trends in undergraduate science and overall grade point averages (GPAs) for medical school applicants and matriculants. For the applicants over the past decade, there has been an increase in science and overall GPAs under 3.00 and a decrease in GPAs over 3.50, the means for science and overall GPAs declining over the decade from 3.24 to 3.13 and from 3.32 to 3.24, respectively. The means for science and overall GPAs of matriculants declined over the decade, from 3.46 to 3.38 and from 3.50 to 3.45, respectively. However, the increased number of applicants permitted schools to select a larger proportion of 1992-93 matriculants with science and overall GPAs over 3.50.

Increase in applicant pool since 1988 has allowed medical schools to select more applicants with high premedical GPAs

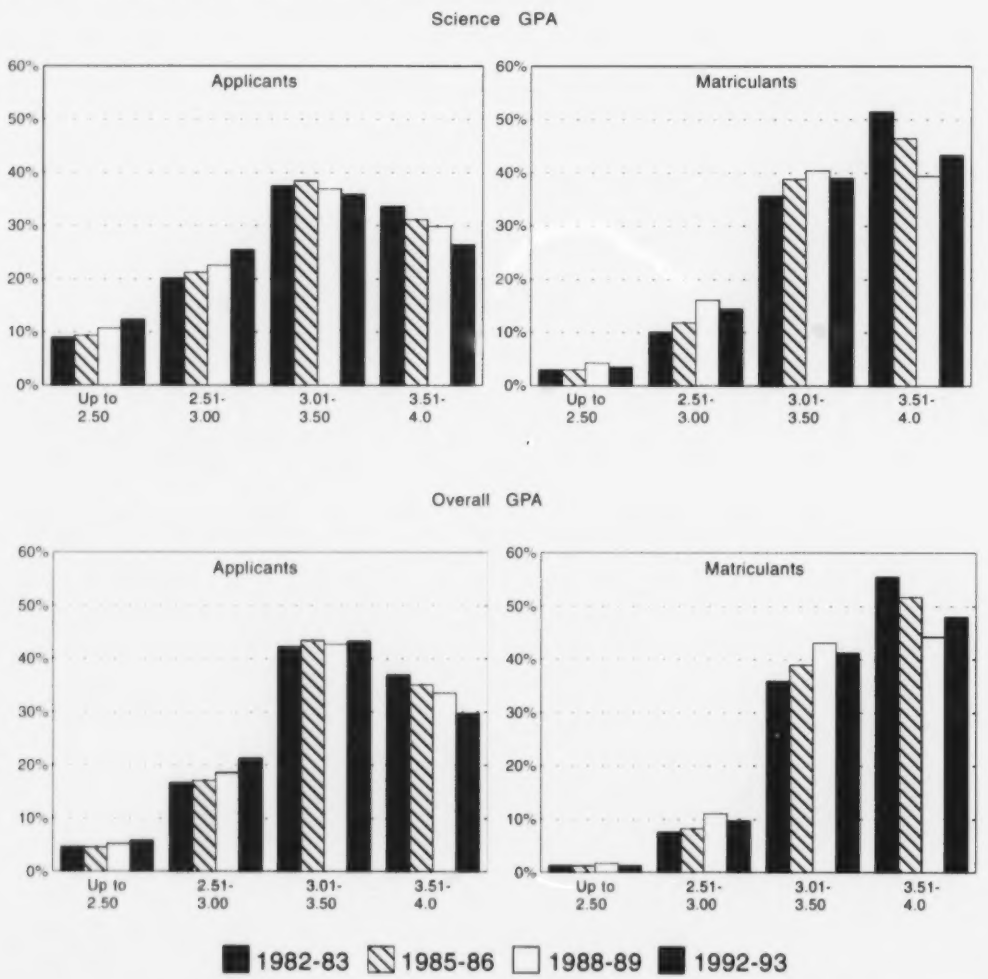


Figure 11. Science and overall premedical grade point averages of medical school applicants and matriculants 1982-83 to 1992-93. *Source:* AAMC Division of Educational Research and Assessment.

Black-American and white matriculants show largest gains in science GPAs

Figure 12 compares the distribution of premedical science GPAs for 1988-89 and 1992-93 medical school applicants and matriculants, by race-ethnicity. While there has tended to be a deterioration in the science GPA distribution of the applicant pool over the period (increase in the percentages of science GPAs under 3.00 and decrease in those over 3.00), the tendency amongst matriculants has been in the other direction, with a decline in the lower science GPAs and an increase in the higher science GPAs across racial-ethnic groups. Black-American and white matriculants showed the greatest gains.

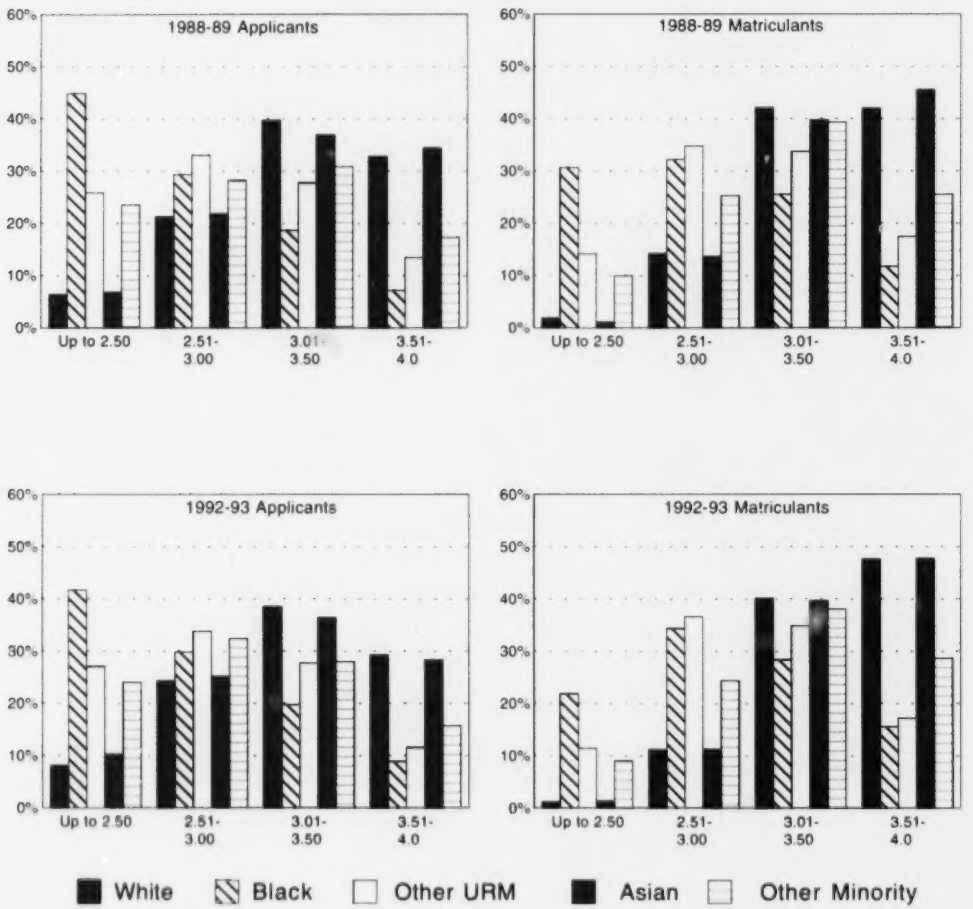


Figure 12. Premedical science grade point averages of applicants and matriculants, by race-ethnicity. (Race-ethnicity as defined in Figure 6.) *Source:* AAMC Division of Educational Research and Assessment.

Figure 13 compares the distribution of overall premedical GPAs for 1988-89 and 1992-93 medical school applicants and matriculants, by race-ethnicity. Over the decade, there has been a slight increase in GPAs below 3.00 and a decrease in GPAs over 3.00 for applicant groups, except black-Americans. For matriculants, there has been a decline in lower overall GPAs and an increase in higher GPAs over the period, the greatest proportionate gain in GPAs over 3.00 seen for black-Americans and other minorities.

Gains in overall GPAs of matriculants, especially for black-Americans and other minorities

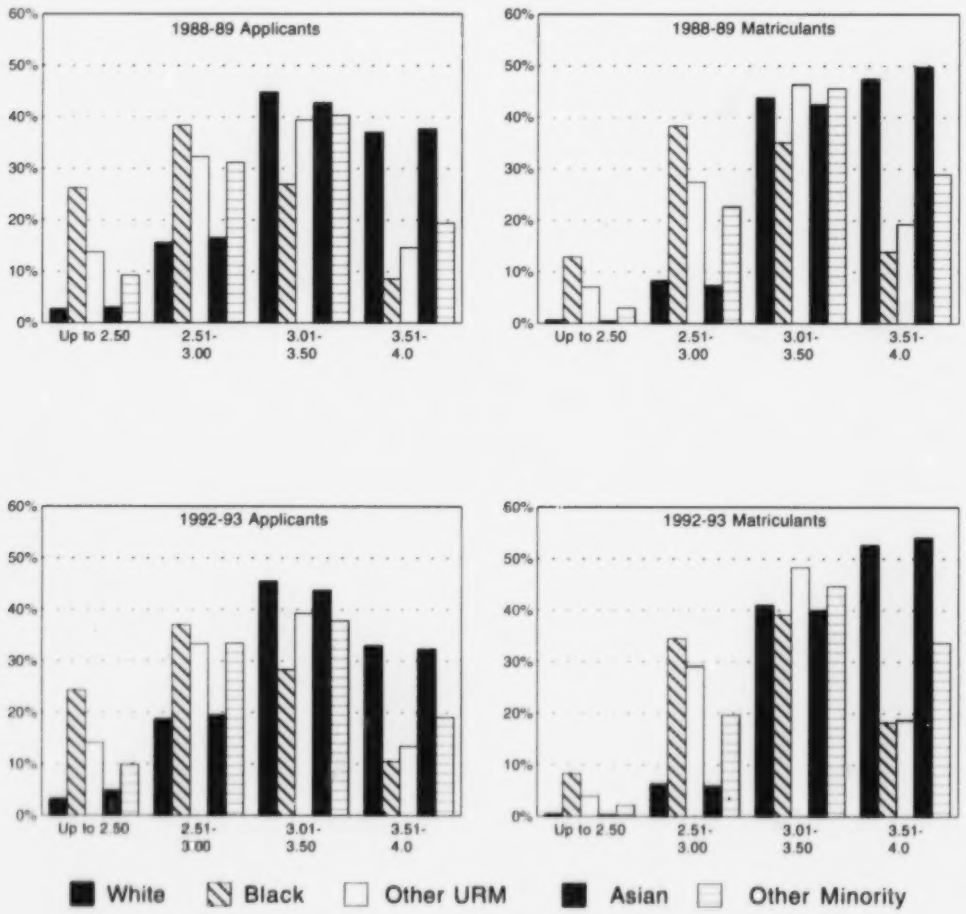


Figure 13. Premedical overall grade point averages of applicants and matriculants, by race-ethnicity. (Race-ethnicity as defined in Figure 6.) *Source:* AAMC Division of Educational Research and Assessment.

Some deterioration in applicants' MCAT scores during decline in pool

Figure 14 shows the slight increases in the percentages of applicants with lower MCAT scores and the slight declines in the percentages of applicants with higher MCAT scores during the shrinkage of the applicant pool between 1982 and 1988. Not shown in the figure: In 1985-86, there were 32,893 applicants, with an 8.80 average in Science Problems; in 1988-89, the average for 26,721 applicants was 8.50.

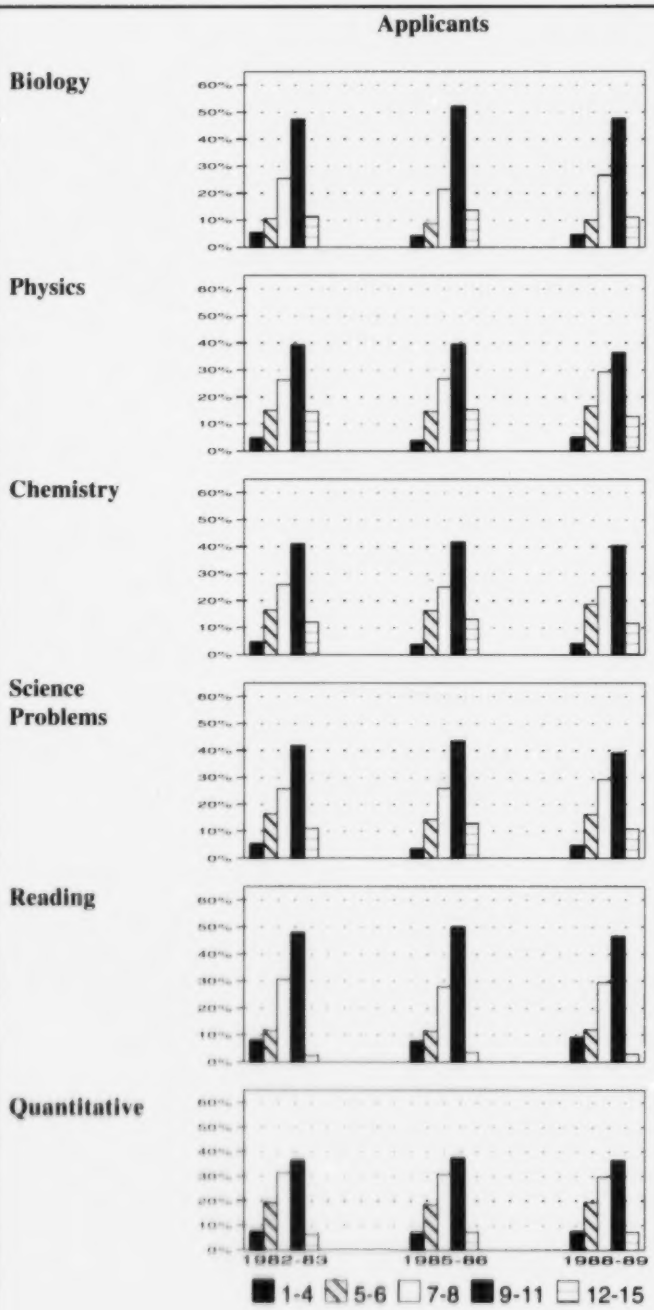
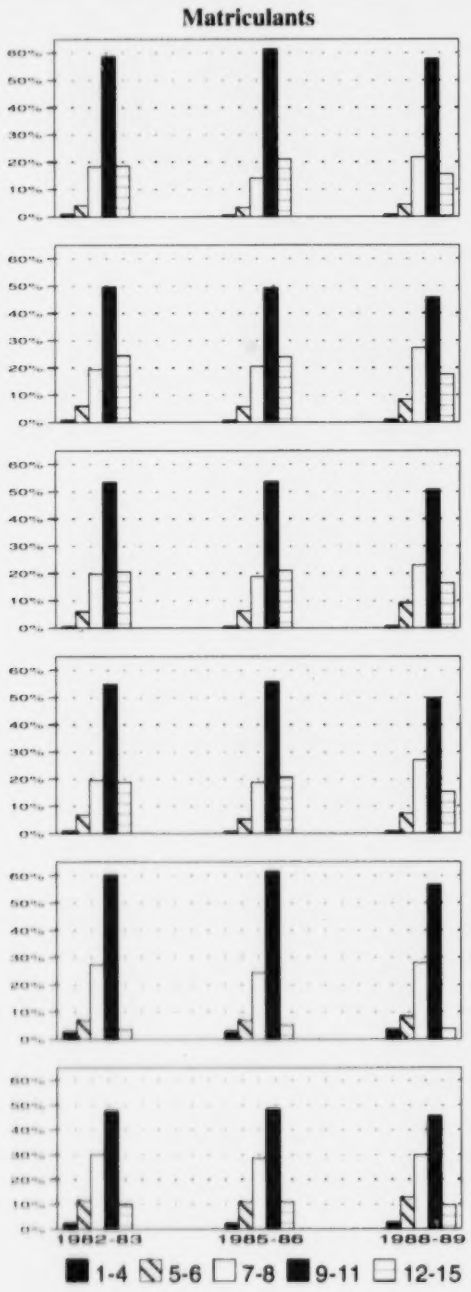


Figure 14. MCAT subtest scores for applicants in 1982-83, 1985-86, and 1988-89. *Source:* AAMC Division of Educational Research and Assessment.



Similar deterioration in MCAT scores of matriculants during decline in size of applicant pool

Figure 15 shows increases in the percentages of matriculants with lower MCAT scores and decreases in the percentages with higher MCAT scores during the applicant decline.

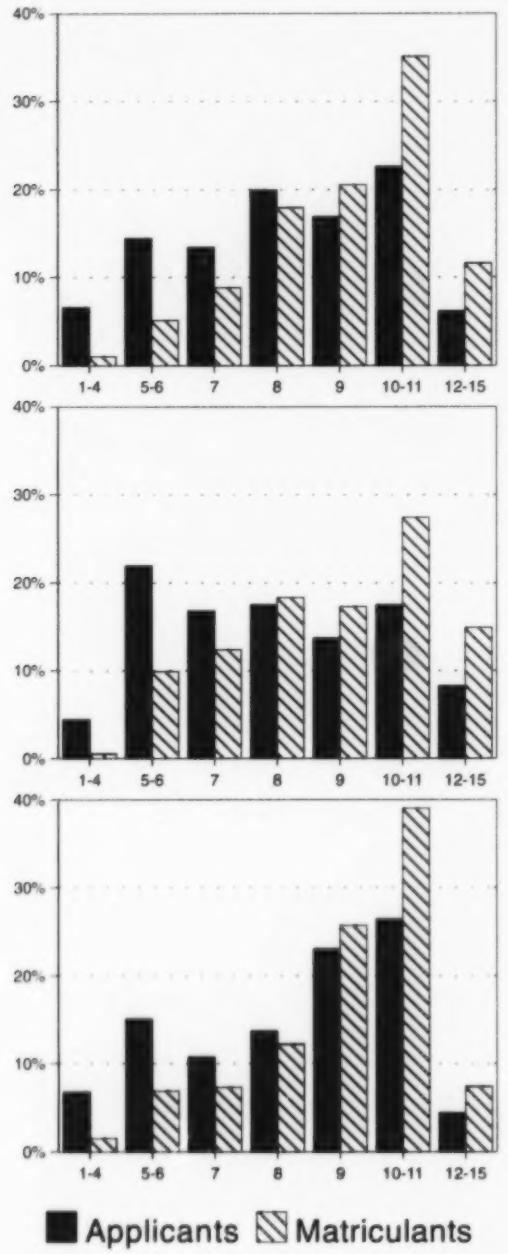
Figure 15. MCAT subtest scores for matriculants in 1982-83, 1985-86, and 1988-89. *Source:* AAMC Division of Educational Research and Assessment.

1991 MCAT equally weights Science and Verbal Reasoning

In 1991, the MCAT was revised to enhance its predictive value for medical school admission committees and to encourage applicants' broader preparation in the humanities, social sciences, and natural sciences. Figure 16 shows the breakdown of test content, number of questions, and maximum time for each section. The 1977 "New" MCAT covered four areas of science assessment (Biology, Chemistry, Physics, and Science Problems), and two skills analyses (Reading and Quantitative), giving the appearance that science was worth two-thirds and verbal skills worth one-third. The 1991 version of the MCAT gives the two equal weight by using two science subtests (Biological Sciences and Physical Sciences) and two verbal subtests (Verbal Reasoning and a Writing Sample).

1977 "New" MCAT			1991 Revised MCAT		
Subtest	Number of Questions	Maximum Time	Subtest	Number of Questions	Maximum Time
Science Knowledge: Biology Chemistry Physics	125	135 Minutes	Physical Sciences	77	100 Minutes
Science Problems: Biology Chemistry Physics	66	85 Minutes	Biological Sciences	77	100 Minutes
Skills Analysis: Reading	68	85 Minutes	Verbal Reasoning	65	85 Minutes
Skills Analysis: Quantitative	68	85 Minutes	Writing Sample	2	60 Minutes

Figure 16. A comparison of test content between the 1977 "New" MCAT and the 1991 Revised MCAT. *Source:* AAMC Section for the Medical College Admissions Test.



Matriculants outscore applicants

Figure 17 shows the percentages of 1992-93 applicants and matriculants, by MCAT subtest score ranges. A greater proportion of matriculants had higher MCAT scores, compared with the score distribution in the applicant pool. Not shown in the figure: 1992-93 applicants averaged 8.20, 8.06, and 8.29 for Biological Sciences, Physical Sciences, and Verbal Reasoning, respectively, while the 1992-93 matriculants averaged 9.32, 9.16, and 9.24, respectively.

Figure 17. Percentages of medical school applicants and matriculants, by MCAT scores. *Source:* AAMC Division of Educational Research and Assessment.

1991-92 applicants' MCAT scores vary significantly across racial-ethnic groups

Figure 18 shows the variation in MCAT subtest scores of 1991-92 medical school applicants across racial-ethnic groups. To illustrate (not shown in the figure): Black-American applicants averaged 5.85, 5.93, and 6.20 in Biological Sciences, Physical Sciences, and Verbal Reasoning, respectively, while Asian applicants averaged 8.52, 8.65, and 7.87, respectively.

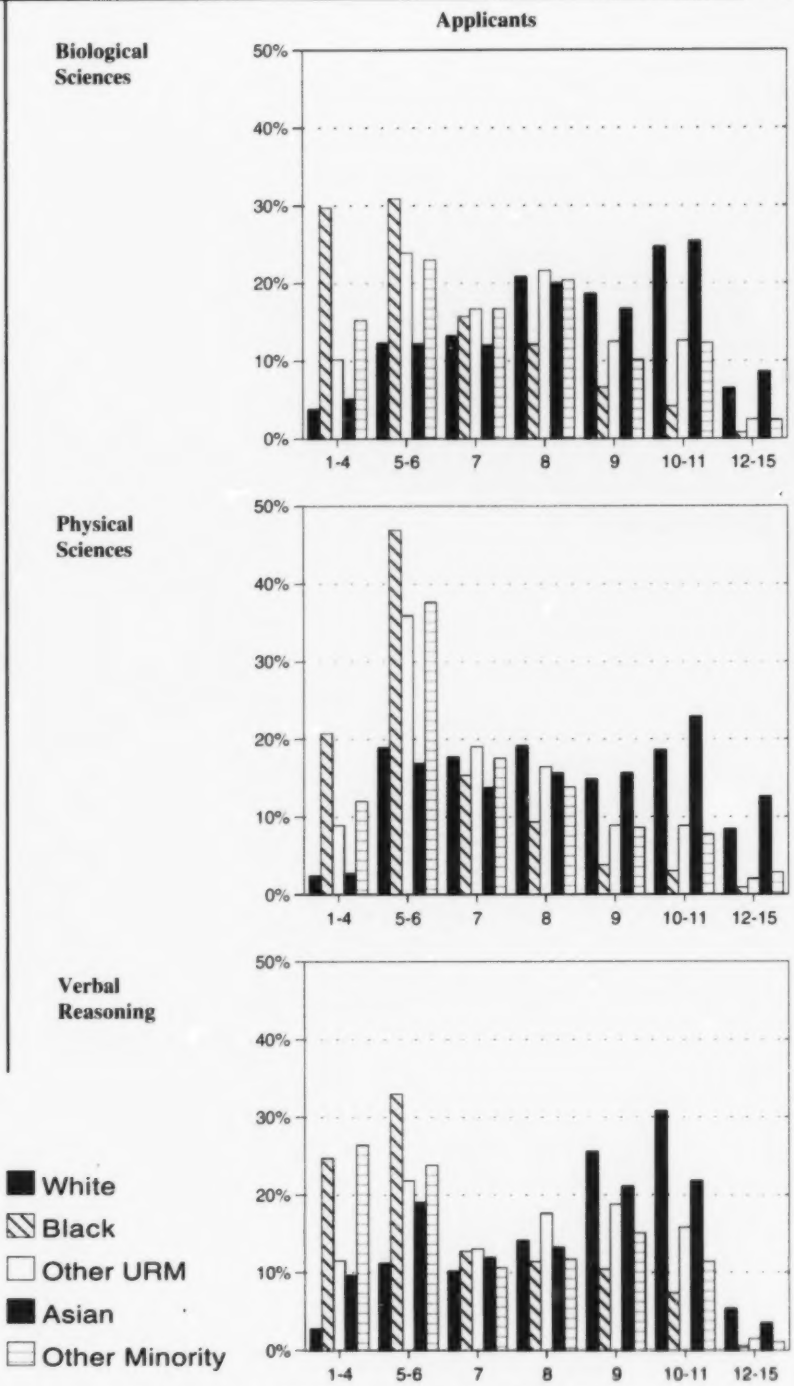
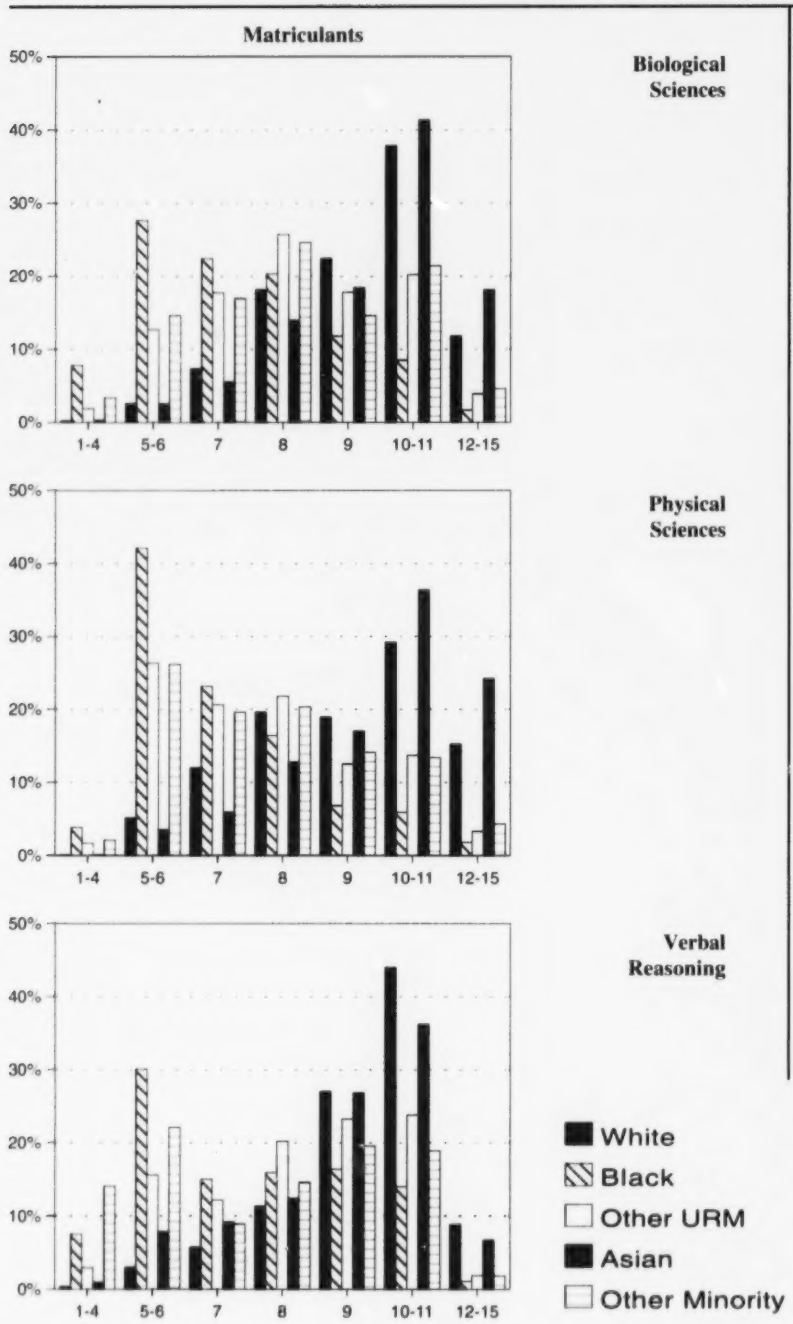


Figure 18. Percentages of 1991-92 medical school applicants, by MCAT subtest scores and race-ethnicity. (Race-ethnicity as defined in Figure 6.) *Source:* AAMC Division of Educational Research and Assessment.



1991-92 matriculants' MCAT scores vary significantly across racial-ethnic groups

Figure 19 shows the variation in MCAT subtest scores of 1991-92 medical school matriculants across racial-ethnic groups. To illustrate (not shown in figure): White matriculants averaged 9.53, 9.35, and 9.60, whereas underrepresented minority matriculants averaged 7.54, 7.20, and 7.70 in Biological Sciences, Physical Sciences, and Verbal Reasoning, respectively.

Figure 19. Percentages of 1991-92 medical school matriculants, by MCAT subtest score ranges and race-ethnicity. (Race-ethnicity as defined in Figure 6.)
Source: AAMC Division of Educational Research and Assessment.

Academic Progress, Graduation, and Residency Match Results

- Academic Progress
- Graduation Rates
- National Residency Match Results

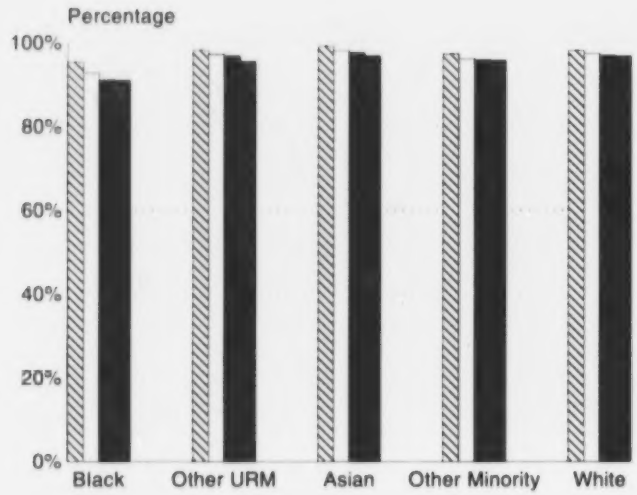


Figure 20. Retention rates (percentage of entering class retained at the end of each academic year) for 1988-89 matriculating class, by race-ethnicity. (Race-ethnicity as defined in Figure 6.) *Source:* Derived from AAMC Student and Applicant Information Management System (SAIMS).

The majority of dismissals and withdrawals occur during the first two years of medical school

Figure 20 shows the percentage of the 1988-89 entering class retained at the end of each succeeding academic year.

The great majority (96.1%) of matriculants progressed into the fourth year. Withdrawals and dismissals declined successively: 2.0% during the first year, 0.9% in the second year, 0.7% in the third year, and 0.3% in the fourth year.

Retention rates varied across racial-ethnic groups. Fourth-year retention rates were 90.9% for black-Americans, 95.4% for other URM, 96.7% for Asian and Pacific Islanders, 95.6% for other minorities, and 96.6% for whites.

Graduation rates, dismissals, and withdrawals vary with student characteristics

Figure 21 arrays the status of 1988-89 matriculants at the end of their fourth academic year, 1991-92. The majority had graduated and almost all of the students in the "still enrolled" category will eventually do so. Some student characteristics were associated with higher percentages of dismissal, withdrawal, and graduation in more than four years.

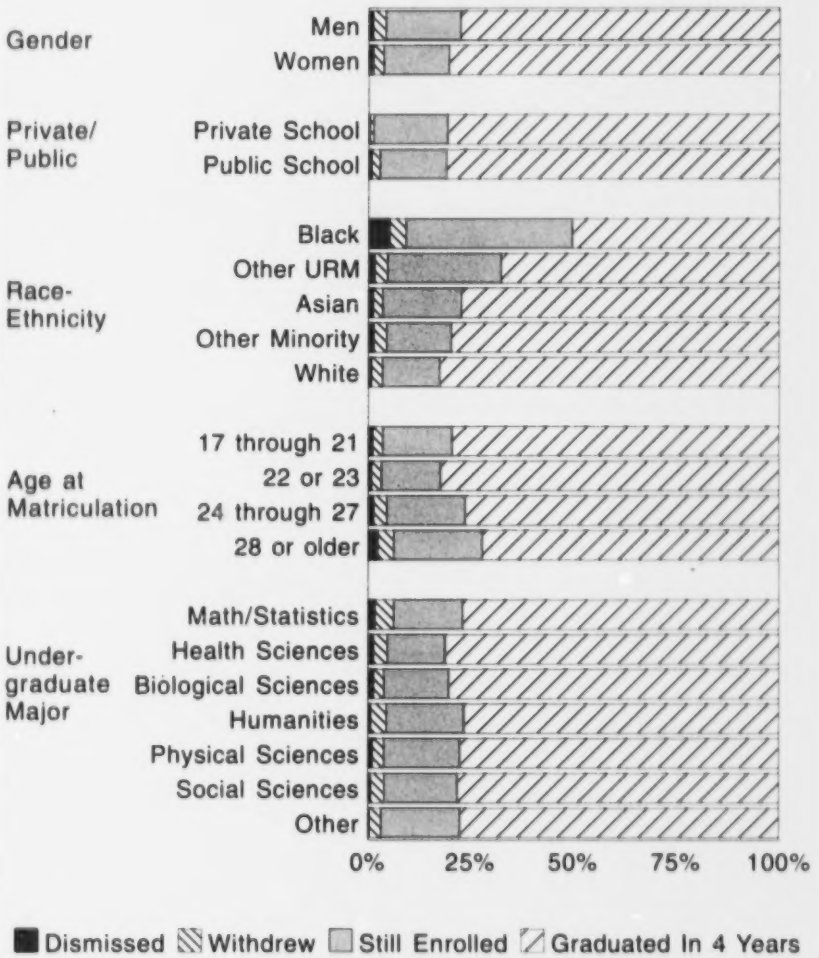


Figure 21. Percentages of 1988-89 matriculants in each academic status category* after their fourth academic year, by selected student characteristics. (Race-ethnicity and undergraduate major as defined in Figures 6 and 10, respectively.) *Source:* Derived from SAIMS.

**Dismissed* is for both academic and non-academic reasons; *withdrew* includes transfers out of U.S. medical schools and deaths; *still enrolled* includes students expected to graduate and those on leaves of absence (special studies, financial, health, academic, joint degree, and other reasons).

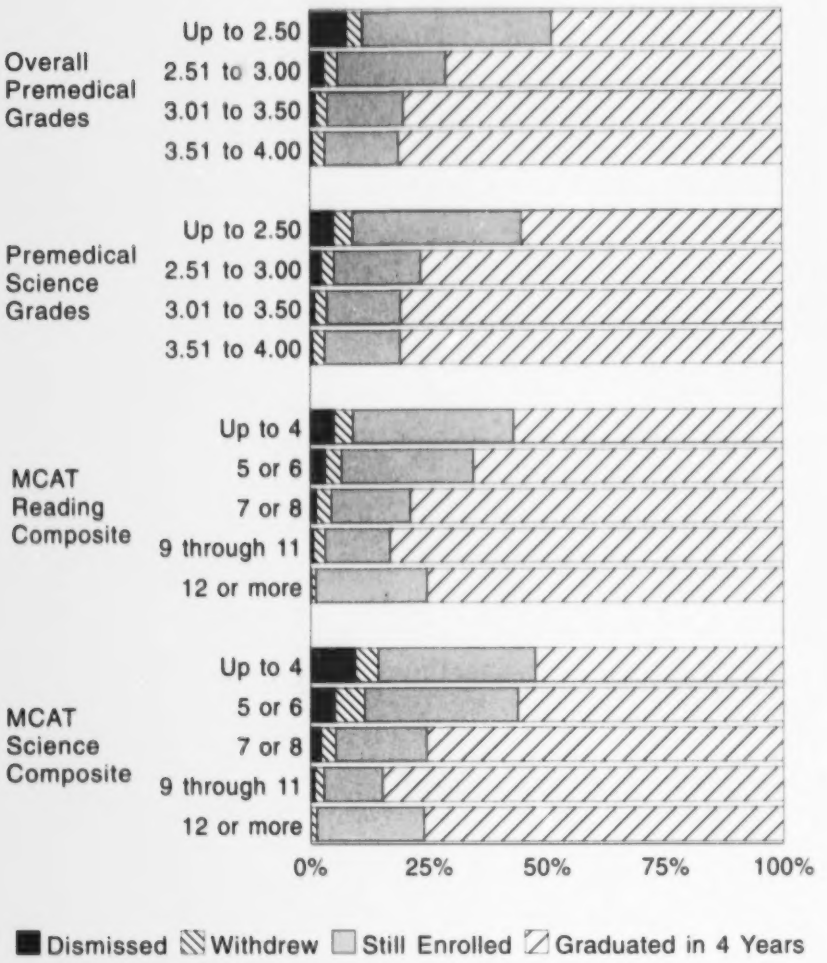


Figure 22. Percentages of 1988-89 matriculants in each academic status category after the fourth academic year, 1991-92, by MCAT scores and premedical grades. *MCAT reading composite* is average of the Reading and Quantitative subtests; *MCAT science composite* is average of the Biology, Chemistry, Physics, and Science Problem subtests. (Academic status categories as defined in Figure 21.) *Source:* Derived from SAIMS.

Graduation rates, dismissals, and withdrawals vary with MCAT scores and undergraduate GPAs

Figure 22 shows premedical GPAs and MCAT scores correlate inversely with dismissal percentages. The percentages of students still enrolled at the end of the fourth year are inversely related to premedical GPAs and MCAT scores, except for the category of MCAT scores of 12 or more that includes students in extended M.D./Ph.D. programs, completing thesis requirements or special studies, etc.

Participation in the match has increased over last decade

Figure 23 shows the participation of U.S. graduating seniors in the match over the last 10 years. The number of graduates with no rankings dropped from 516 in 1983 to 143 in 1992. The number failing to match rose slightly from 1989 to 1992 (902 and 1,073, respectively).

Figure 24 shows that participation in the 1992 match varied with graduates' characteristics. Women were more likely than men to participate in the match, while men were more likely than women to acquire a residency positon outside the match. A similar pattern was found for black-American and white graduates. Other minorities (Commonwealth Puerto Rican and other Hispanic categories) attained residencies, both inside and outside the match, in much lower proportions compared with other racial-ethnic groups.

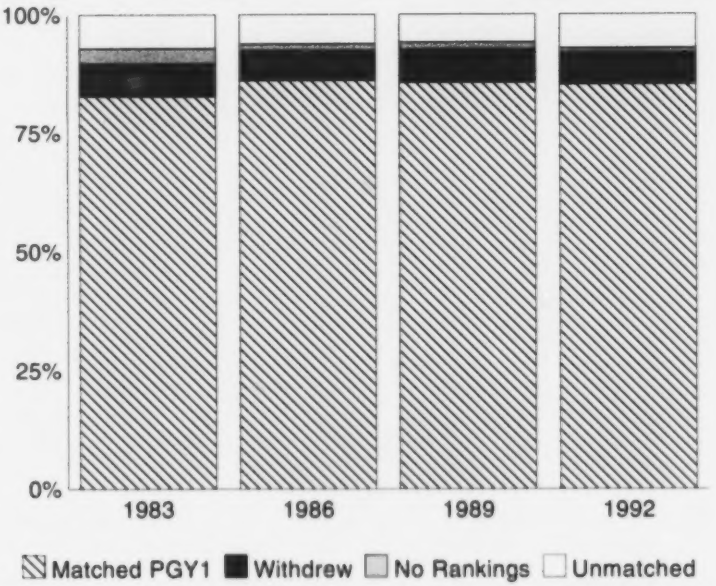


Figure 23. Percentages of U.S. medical school graduating seniors participating in the residency match, 1983, 1986, 1989, 1992. *Source:* National Residency Matching Program.

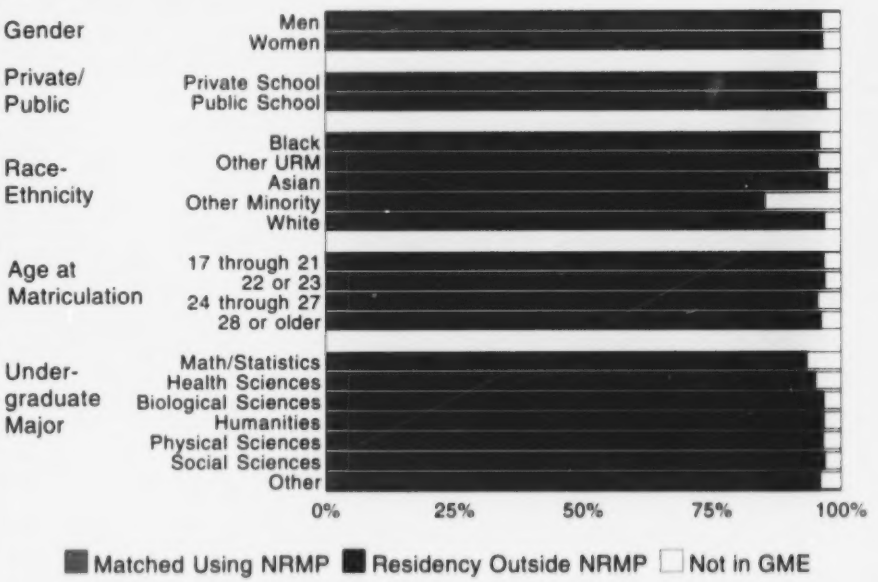


Figure 24. Percentages of 1992 graduates obtaining residency positions through the NRMP and outside the NRMP, and those not entering GME, by selected student characteristics. *(Not in GME* includes graduates in non-medical activities, research, taking a year off, and those failing to match. Race-ethnicity and undergraduate major as defined in Figures 6 and 10, respectively.) *Source:* Derived from SAIMS.

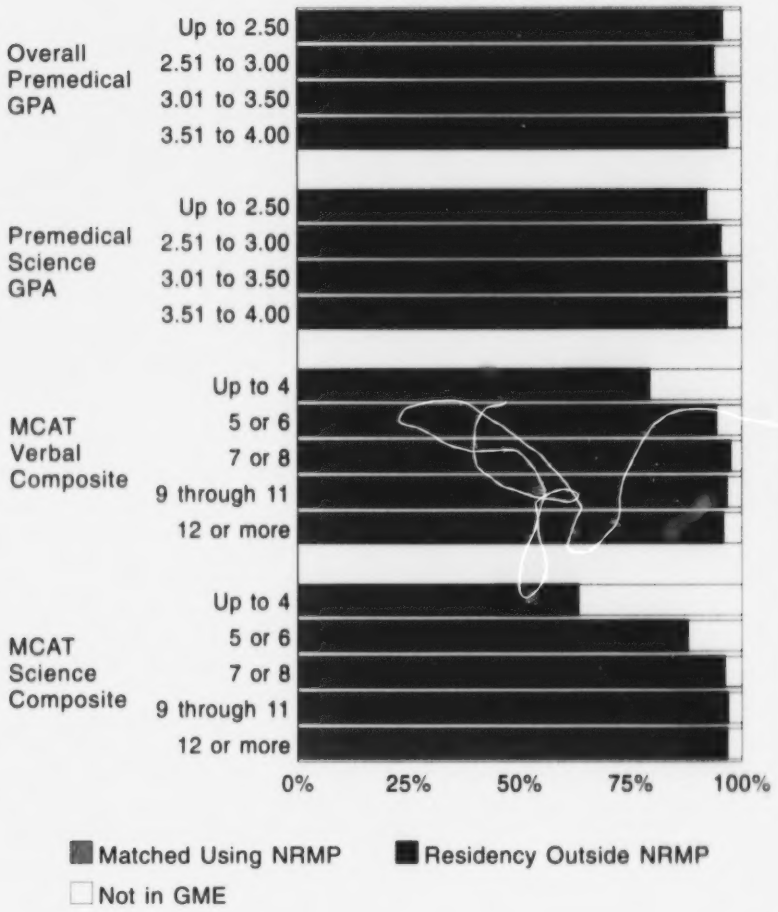


Figure 25. Percentages of 1992 graduates obtaining residency appointments in and outside the NRMP, correlated with premedical grades and MCAT scores. (Composite MCAT scores and residency match categories as defined in Figures 22 and 24, respectively.) *Source:* Derived from SAIMS.

Low MCAT scores are associated with low match rates

Figure 25 shows that 1992 residency appointment rates varied with premedical grades and MCAT scores. Fewer graduates with MCAT verbal and science scores under 6 received residency appointments, compared to those with higher MCAT scores. (See relationship between academic progress and MCAT scores depicted in Figure 22.)

Graduates' Specialty Choices and Practice Intentions

- Specialty Choices
- Practice Settings
- Serving Socioeconomically-deprived Areas
- Research Plans
- Practice Intentions
- Educational Debt Influences

Table 1.
Specialty/Subspecialty Certification Plans (Percentage*) of
Graduating Medical Students 1982 to 1992†

Specialties/Subspecialties	1982	1983	1984	1985	1986	1987	1988	1989	1991	1992
Allergy and Immunology	0.3%	0.3%	0.3%	0.4%	0.5%	0.3%	0.5%	0.7%	0.4%	0.3%
Anesthesiology & Critical Care	4.5	4.8	5.4	5.7	5.0	5.5	5.7	6.2	7.0	6.8
Dermatology and Subspecialties	1.1	1.3	1.5	1.7	1.8	1.9	2.2	2.7	2.0	1.9
Emergency Medicine	2.5	2.8	2.9	2.9	3.0	3.2	3.4	3.7	5.1	5.4
Family Practice	15.5	15.1	14.4	13.3	13.8	14.8	11.3	11.8	9.4	9.0
Family Practice Subspecialties	--	--	--	--	--	--	--	--	2.0	1.9
General Internal Medicine	14.4	12.9	11.4	10.7	10.0	8.6	8.1	6.0	2.9	3.2
Internal Medicine Subspecialties	7.7	9.0	9.7	10.6	10.4	10.6	11.7	13.5	16.0	16.4
Neurology and Child Neurology	1.8	1.5	2.0	1.9	2.2	1.8	2.2	2.1	2.3	2.2
Nuclear Medicine	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.2	0.0	0.0
Obstetrics/Gynecology	6.6	6.1	6.7	5.4	5.2	4.5	5.3	4.6	2.5	2.7
Ob/Gyn Subspecialties	1.2	1.4	1.3	1.6	1.6	1.7	1.8	2.1	3.9	4.1
Ophthalmology	3.6	3.5	3.5	3.6	3.8	3.6	3.5	3.4	3.4	3.4
Pathology	2.4	2.6	2.1	1.7	1.6	1.9	1.7	2.1	0.5	0.3
Pathology Subspecialties	--	--	--	--	--	--	--	--	1.7	1.7
General Pediatrics	6.2	6.1	6.4	5.8	6.0	5.7	5.3	4.9	2.6	2.4
Pediatric Subspecialties	1.9	1.9	1.9	2.3	2.4	2.9	2.9	3.1	5.3	5.3
Physical Medicine and Rehabilitation	0.5	0.8	0.9	1.2	1.4	1.5	1.8	1.8	1.9	1.7
Preventive Medicine and Public Health and Subspecialties	0.2	0.2	0.3	0.2	0.2	0.3	0.2	0.4	0.3	0.4
Psychiatry	4.0	4.0	3.5	4.2	4.4	4.4	4.6	4.1	2.1	1.6
Psychiatry Subspecialties	0.8	0.7	0.8	1.0	1.1	1.3	1.6	1.6	2.9	2.5
Radiology	0.4	0.3	0.2	0.2	0.2	0.2	0.5	0.2	0.5	0.5
Radiology Subspecialties	4.3	5.2	5.5	5.5	5.0	5.6	6.4	6.2	7.2	6.7
General Surgery	6.3	5.5	6.0	6.2	6.5	6.1	5.6	5.3	2.1	2.1
Surgical Subspecialties	0.8	0.7	0.6	0.6	0.6	0.7	0.7	0.8	3.2	3.7
Colon and Rectal Surgery	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.3
Neurological Surgery and Critical Care Medicine	0.9	1.0	0.8	1.0	0.8	0.9	1.2	1.0	1.0	1.0
Orthopedic and Hand Surgery	6.1	5.7	5.6	5.7	5.9	5.1	5.4	5.1	4.7	5.3
Otolaryngology	2.2	2.1	2.0	2.4	2.3	2.2	2.3	2.3	2.3	2.4
Plastic and Hand Surgery	1.3	1.4	1.4	1.4	1.5	1.6	1.3	1.4	1.6	1.5
Thoracic Surgery	1.1	1.2	1.0	0.9	0.8	0.8	0.9	0.8	1.1	1.2
Urology	1.4	1.6	1.9	2.0	1.8	1.9	1.6	1.6	1.8	1.9
Total Percentage	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(Table 1 continued on page 30)

Surveys of specialty certification plans of graduating seniors show residual uncertainty about subspecialization

Table 1 (see page 29) shows the trends in specialty/subspecialty certification plans declared by graduating seniors over the past decade. Interest has increased significantly for anesthesiology and critical care, dermatology, emergency medicine, internal medicine subspecialties,pediatric subspecialties, radiology subspecialties, and surgical sub-specialties. The continuation of Table 1 shows graduates' rate of interest in the generalist, medical, surgical, and support specialties. Part of the changing spectrum of choice reflected in the Medical School Graduation Questionnaire after 1990--especially for the generalist fields--is related to different questioning that allowed graduates to declare that they still were undecided about their subspecialty choices.

Table 1 (Continued).
Specialty/Subspecialty Certification Plans (Percentage*) of
Graduating Medical Students, 1981 to 1992†

Specialties/Subspecialties	1982	1983	1984	1985	1986	1987	1988	1989	1991	1992
Total declaring specialty choice	10,062	9,533	9,743	10,236	9,957	10,386	9,486	10,144	7,749	8,062
Undecided about specialty	700	746	628	628	617	721	653	750	343	477
Undecided about *sub*specialty	--	--	--	--	--	--	--	--	2,717	2,860
Not planning certification	112	109	79	73	89	129	145	161	407	489
No Response	64	93	97	111	76	71	95	120	217	208
Total responding to questionnaire	10,939	10,482	10,548	11,049	10,740	11,308	10,380	11,176	11,434	12,096
Total generalist specialties§	36.1%	34.1%	32.2%	29.9%	29.9%	29.1%	24.8%	22.7%	14.9%	14.6%
Total medical specialties‡	17.6	18.8	19.6	22.0	22.9	23.2	25.7	27.9	33.0	32.1
Total surgical specialties**	31.6	30.3	30.9	30.6	30.8	29.4	29.7	28.6	27.8	29.6
Total support specialties††	14.7	16.7	17.3	17.5	16.5	18.3	19.8	20.9	24.2	23.7

Source: 1982-1992 AAMC Medical School Graduation Questionnaire.

*Percentages are based on graduates' sole specialty choice and first choice of up to three alternatives, calculated as a fraction of the total number of decided respondents. Respondents who intended not to seek certification in a specialty/subspecialty, or did not respond to the specialty certification question, were not included in the calculations.

†Specialty certification data not available for 1990. Data for 1991 and 1992 are based on a new question format.

§Generalist specialties are general family practice, general internal medicine, and general pediatrics.

‡Medical specialties are family practice subspecialties, internal medicine subspecialties, pediatric subspecialties, psychiatry and neurology and their subspecialties, allergy and immunology and subspecialties, and dermatology and its subspecialties.

**Surgical specialties are general surgery and its subspecialties, colon and rectal surgery, neurological surgery, obstetrics and gynecology and subspecialties, ophthalmology, orthopedic surgery, otolaryngology, plastic surgery, thoracic surgery, and urology.

††Support specialties are anesthesiology and its critical care subspecialty, emergency medicine, nuclear medicine, pathology and its subspecialties, physical medicine and rehabilitation, preventive medicine and public health, and radiology and related subspecialties.

Declining interest in generalism

Figure 26 shows the trends in specialty certification plans between 1982 and 1992, expressed as the percentage of graduating seniors in each year who definitely decided on a choice (sole choice or first choice if more than one was under consideration).

During this period, the proportion planning certification in the generalist specialties declined from an aggregate 34.1% in 1982 to 14.6% in 1992. Interest in the surgical specialties declined slightly over the decade. In contrast, the rate of interest in the medical specialties rose from 17.6% in 1982 to 32.1% in 1992, and the rate of interest in the support specialties rose from 14.7% in 1982 to 23.7% in 1992.

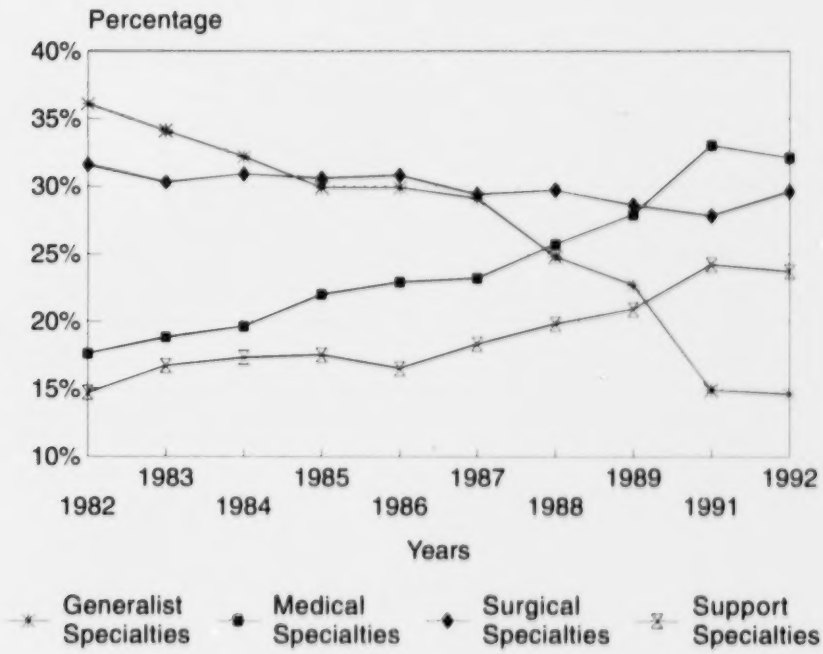


Figure 26. Percentages of graduating seniors planning specialty certification, 1982 to 1992. (Specialty groups as defined in Table 1.) *Source:* AAMC Medical School Graduation Questionnaires 1982-1992.

Generalism suffers from increased subspecialization

Over the past decade, graduates increasingly have favored subspecialization in internal medicine and pediatrics. The decline of interest in family practice has been accompanied recently by attraction toward the newly developed subspecialties in that field.

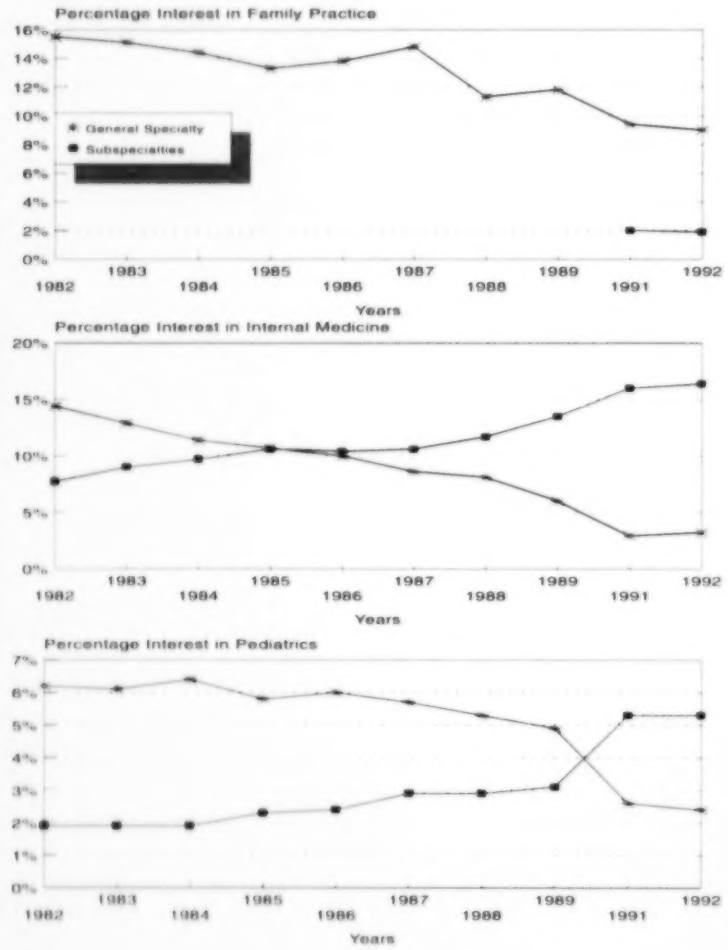


Figure 27. Trends in graduates' planned certification in the general specialties and subspecialties of family practice, internal medicine, and pediatrics, 1982-1992. *Source:* AAMC Medical School Graduation Questionnaires, 1982-1992.

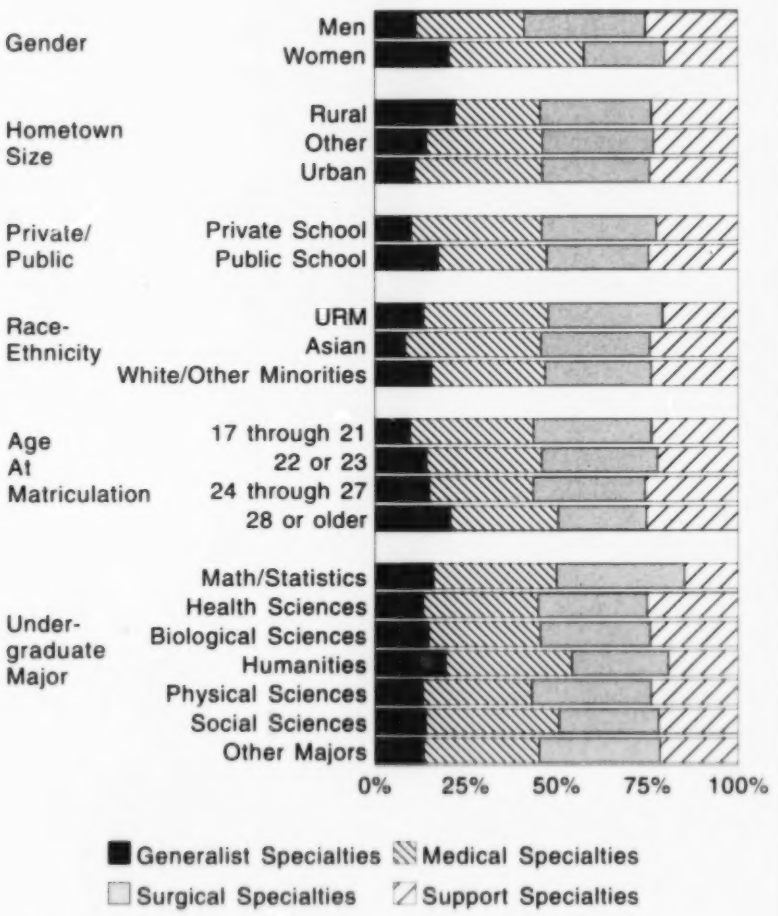


Figure 28. Percentages of 1992 graduates planning specialty certification, by selected student characteristics.* (Race-ethnicity, undergraduate majors and specialty choice groups as defined in figures 6, 10 and Table 1.) *Source:* 1992 AAMC Medical School Graduation Questionnaire.

*Hometown size includes *urban* (large city of 500,000 or more population), *other* (moderate city of 50,000 to 500,000 population and small city of 10,000 to 50,000 population, and their suburbs), and *rural* (town of 2,500 to 10,000 population, small town of less than 2,500 population, and rural and unincorporated area).

Variation in Specialty Choice

Figure 28 shows the influence of selected student characteristics on the rates of interest in the different specialty groups. In 1992, men were more likely to choose a surgical specialty than women. Women graduates, graduates with rural backgrounds, public medical school graduates, older students, and humanities majors showed greater than average interest in the generalist specialties.

Planned practice settings vary with students' hometown size, public/private medical education, race-ethnicity, and age

Figure 29 shows the decline in interest of medical school graduates in rural practice over the past decade.

Figure 30 shows the relationships between 1992 graduates' planned practice settings and students' characteristics and public/private medical education. Graduates planning large-city practice were more likely to come from urban backgrounds, to be members of an underrepresented minority group, or to have graduated from a private medical school. Higher interest in rural practice was associated with older matriculants, graduates with rural backgrounds, public school education, and white or non-underrepresented minority status.

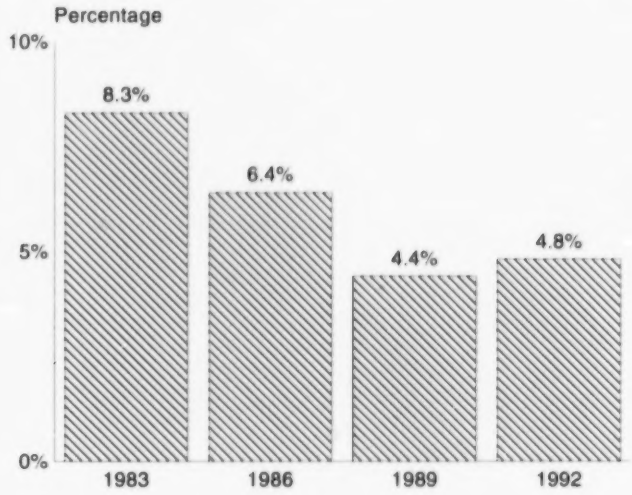


Figure 29. Percentages of medical school graduates planning rural practice, 1983, 1986, 1989, and 1992. (Rural as defined in Figure 28) *Source:* AAMC Medical School Graduate Questionnaires, 1983, 1986, 1989, and 1992.

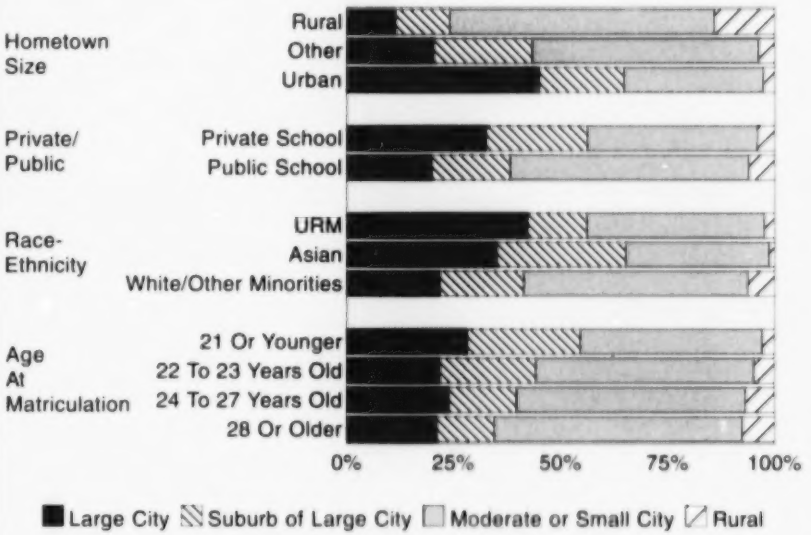


Figure 30. Relationships between selected student characteristics and the planned practice settings of 1992 medical school graduates. (Definitions as in Figures 6, 9, and 28.) *Source:* 1992 AAMC Medical School Graduation Questionnaire.

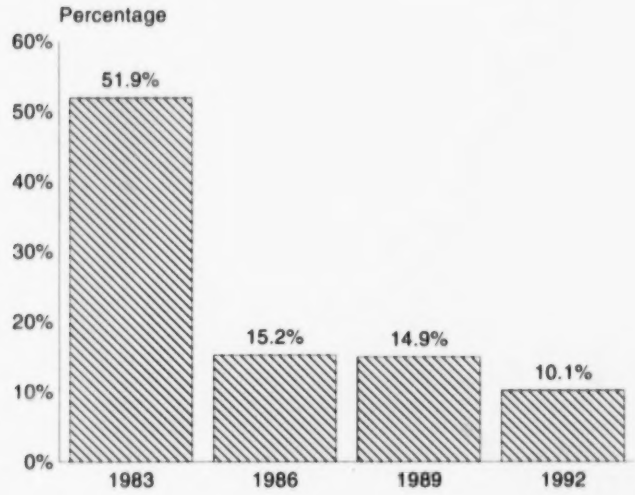


Figure 31. Percentages of graduates planning practice in socioeconomically-deprived areas in 1983, 1986, 1989, and 1992. The major decline between 1983 and 1986 is an artifact of changed wording in the survey instrument that allowed an "undecided" choice in 1986 et seq. *Source:* AAMC Medical School Graduation Questionnaires, 1983, 1986, 1989, and 1992.

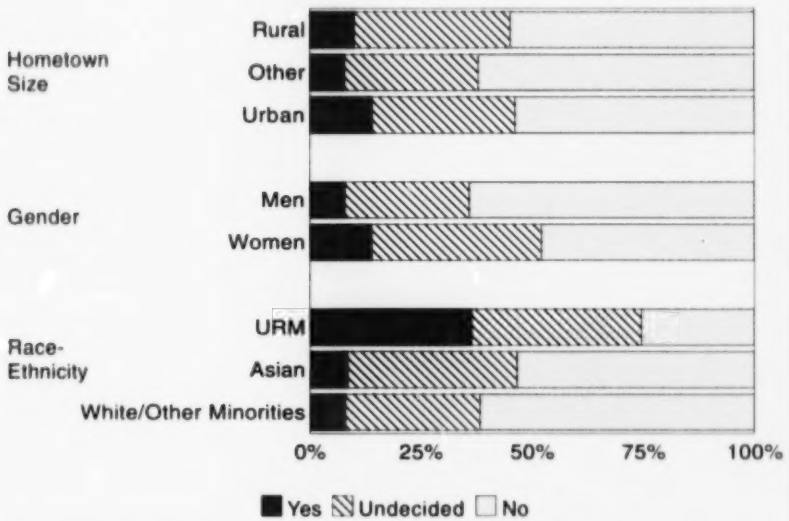


Figure 32. Relationship between selected student characteristics and 1992 graduates' plans to practice in socioeconomically-deprived areas. (Race-ethnicity and hometown size as defined in figures 6 and 28, respectively.) *Source:* 1992 AAMC Medical School Graduation Questionnaire.

Interest wanes for practice in socioeconomically-deprived areas

Figure 31 shows the declining interest of graduates for practice in socioeconomically-deprived areas. Much of the apparent decline between 1983 and 1986 is an artifact of changed survey questioning.

Figure 32 shows that 1992 underrpresented minority graduates, women, and graduates with urban backgrounds were more inclined toward practice in socioeconomically-deprived areas.

Variation In Planned Research Involvement

Figure 33 shows that interest in exclusive and significant (i.e., 25% of career) research careers has remained fairly stable over the last decade.

Figure 34 shows career interests in research are greater amongst graduates of private medical schools, men, and Asians.

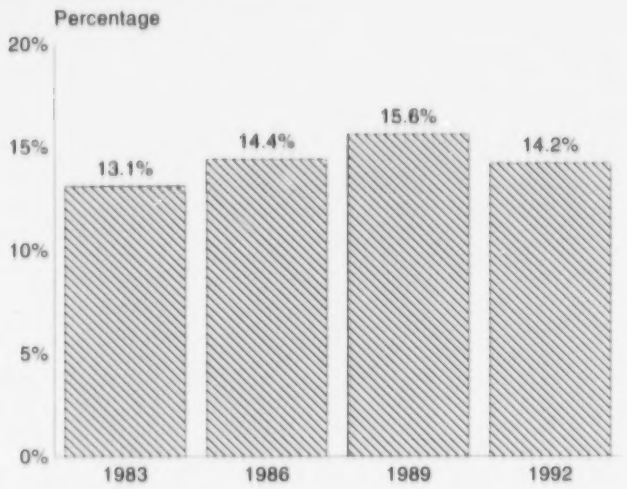


Figure 33. Percentage of graduates planning exclusive or significant (at least 25% of career) research involvement, 1982, 1986, 1989, and 1992. *Source:* AAMC Medical School Graduation Questionnaires, 1983, 1986, 1989, and 1992.

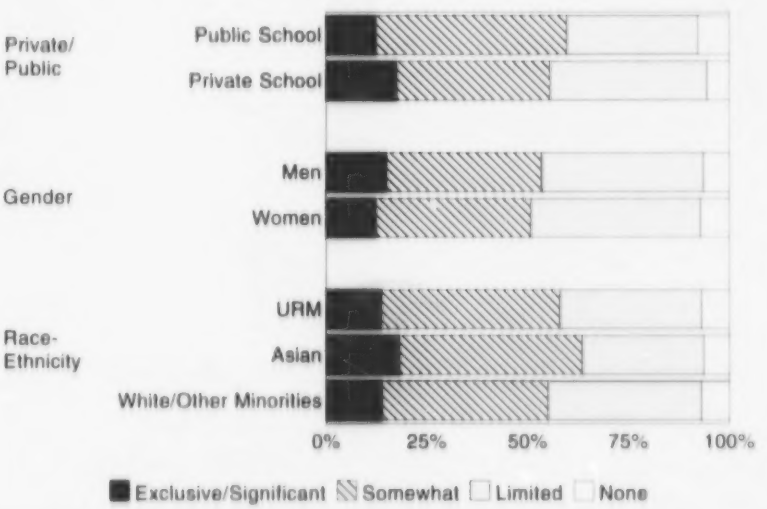


Figure 34. Relationships between selected student characteristics and public/private medical school education and percentages of 1992 graduates planning levels of research involvement* in future careers. (Race-ethnicity as defined in Figure 6.) *Source:* 1992 AAMC Medical School Graduation Questionnaire.

**Exclusively/significantly involved*, as defined in Figure 33; *somewhat involved*, one year or less set aside for research or less than 25% of continuous career; *involved in a limited way*, occasional cooperation with clinical trials of new drugs or medical devices in practice; *none*, not involved.

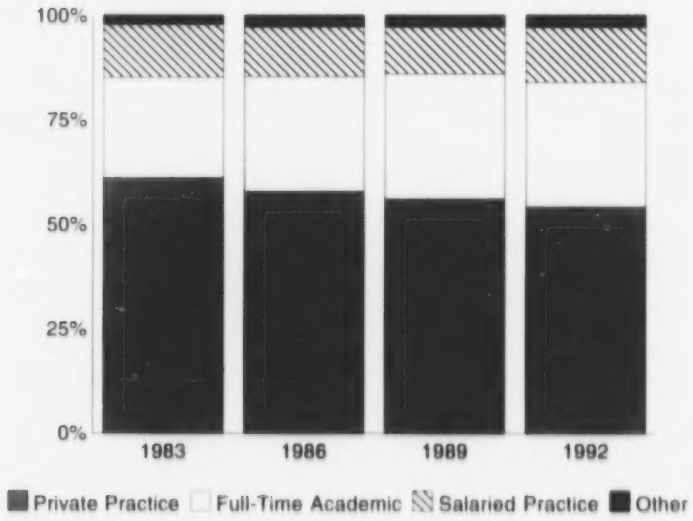


Figure 35. Percentages of graduates declaring interests in private practice, salaried practice, and full-time academic careers.* *Source:* 1992 AAMC Medical School Graduation Questionnaire.

**Private practice* is alone, in partnership with another, or with a group of three or more physicians; *full-time academic* includes basic science, research, and clinical faculty appointment; *salaried practice* is employment by a hospital, HMO, and state or federal agency; and *other* includes salaried research scientist, administration, and other.

Declining interest in private practice

Figure 35 shows the ten-year trends in first-choice career activities declared by graduating medical students. Between 1983 and 1992, interest in private practice declined from 61% to 54.1% of graduates, while that for full-time faculty appointment increased from 24.2% to 30.0%, and interest in salaried practice rose from 12.7% to 13.1%.

Intended practice and careers vary with student characteristics and educational backgrounds

Figure 36 shows that the levels of interest in private and salaried practice and academic careers vary with graduates' characteristics and educational backgrounds. In 1992, private practice was favored more by men than women graduates and by those with rural and public medical school backgrounds. More women than men were inclined toward salaried practice, as were underrepresented minority graduates and those with urban backgrounds. Academic careers were preferred more by Asian graduates and graduates of private schools.

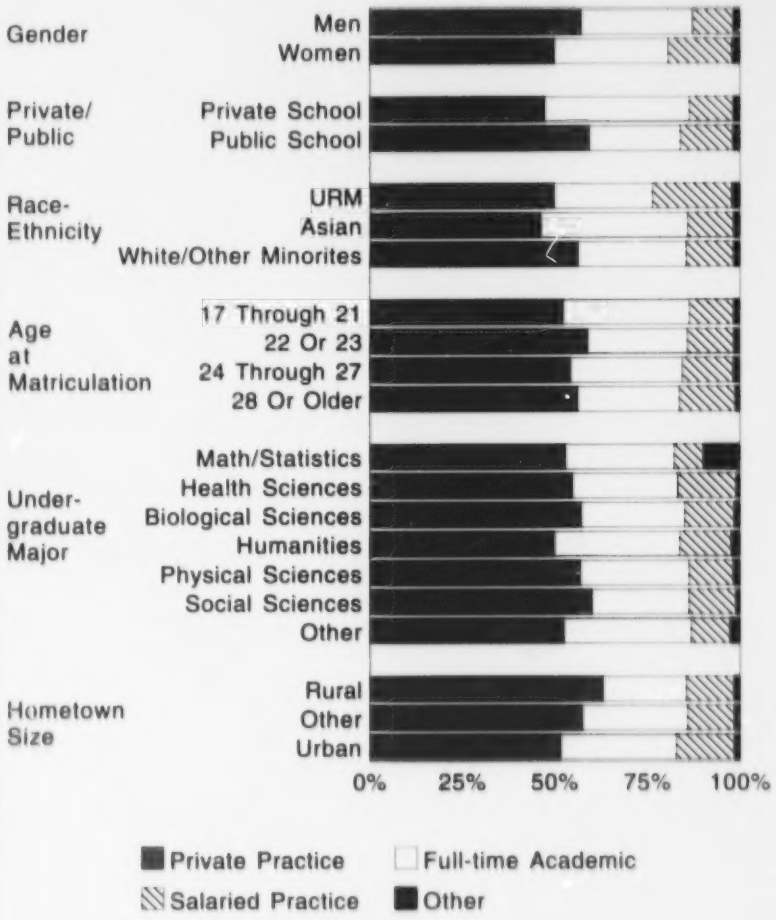


Figure 36. Relationships between selected student characteristics and backgrounds and percentages of 1992 graduates declaring interests in private or salaried practice, full-time academic appointment, and other career directions. (Race-ethnicity, undergraduate majors, hometown size, and practice modes as defined in Figures 6, 10, 28 and 35, respectively.)
Source: 1992 AAMC Medical School Graduation Questionnaire.

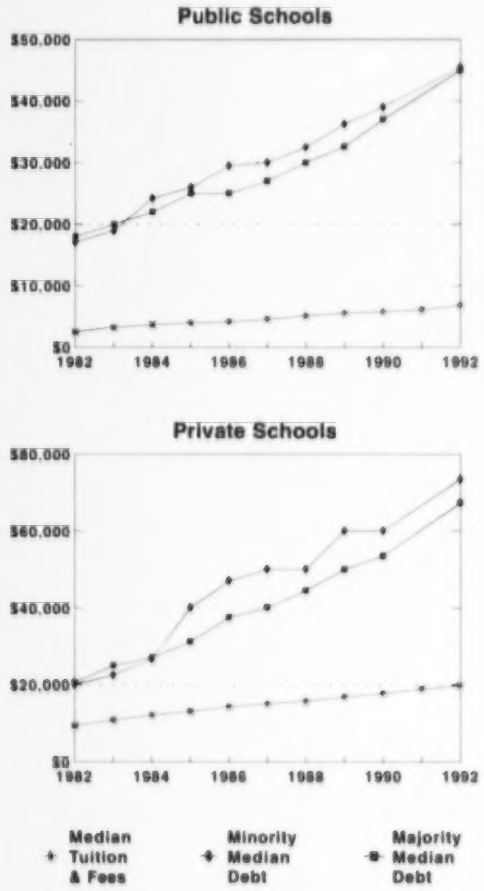


Figure 37. Median educational debt of minority and majority medical students, and median tuition and fees for public and private medical schools, 1982-92. (*Minority* includes black-American, Native American, Mexican American, and Mainland Puerto Rican; *majority* includes white, Asian and Pacific Islander, Commonwealth Puerto Rican, and other Hispanic.) *Sources:* AAMC Medical School Graduation Questionnaires and tuition surveys.

Educational debt inflation outstrips tuition increases

Figure 37 shows the disproportionate increases in graduates' educational debt compared to increases in tuition and fees over the past decade. Since 1985, the median debt accumulated by minority graduates has exceeded that for majority graduates by about $8,000 for private schools and $2,400 for public schools, although the difference narrowed for public schools in 1992.

Educational debt not a strong factor influencing specialty choice

Figure 38 shows how 1992 graduates rated the influence of debt on their planned certification within specialty categories. Overall, a slightly greater proportion of minority graduates (8.3%) than majority graduates (5.8%) identified debt as a strong or major influence on their choices.

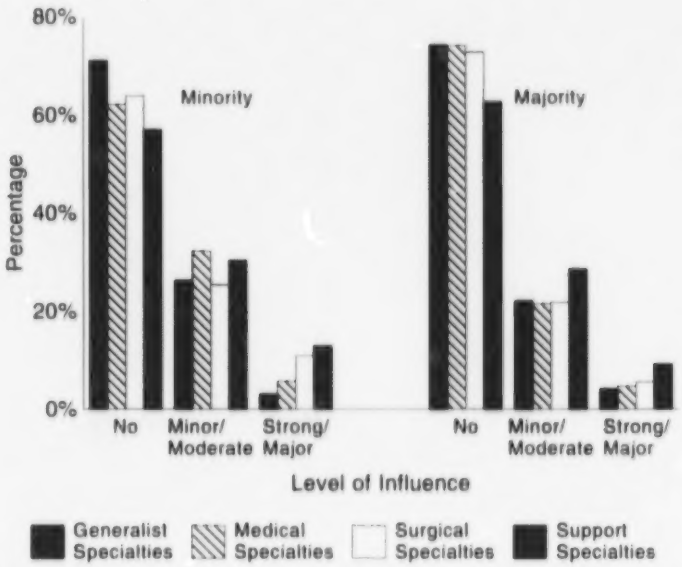


Figure 38. Percentages of 1992 minority and majority graduates citing levels of influence of debt on specialty/subspecialty plans. (Minority and majority, and specialty groups, as defined in Figure 37 and Table 1, respectively.)
Source: 1992 AAMC Medical School Graduation Questionnaire.

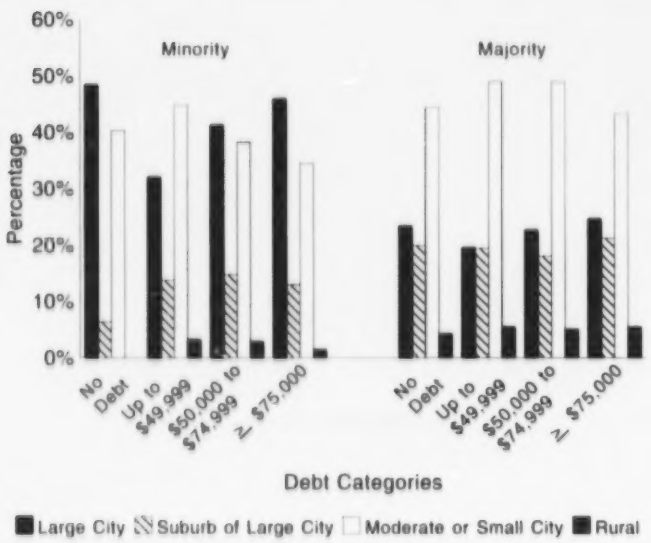


Figure 39. Percentages of 1992 minority and majority graduates planning urban-rural practice,* by categories of indebtedness. (Minority and majority as defined in Figure 37.) *Source:* 1992 AAMC Medical School Graduation Questionnaire.

*The Graduation Questionnaire asks seniors to indicate their planned practice location by choosing between the following: *large city* (population 500,000 or more), *suburb of a large city*, *moderate-size city* (population 50,000 to 500,000), *suburb of a moderate-size city*, *small city* (population 10,000 to 50,000), and *rural* (rural/unincorporated area or small town with a population of 2,500 to 10,000). Figure 39 collapses some of these urban-rural locations and relates interest in these practice settings to levels of indebtedness.

High interest of minority graduates for inner-city practice

Figure 39 shows that 1992 minority graduates without debt were nearly twice as likely as majority graduates to prefer practice in a large city. The preference of minority graduates with debt for practice in a large city was 1.6 to 1.8 times greater than that of majority graduates with debt, across ascending levels of debt. there was significantly less interest of minority graduates, compared to majority graduates, for practice in the suburbs of a large city, in a moderate or small city, or in rural areas.

Strong interest of minority graduates for practice in socioeconomically-deprived areas

Figure 40 shows that the proportion of 1992 minority graduates intending to practice in a socioeconomically-deprived area was over four times greater than that of majority graduates, across all levels of educational debt.

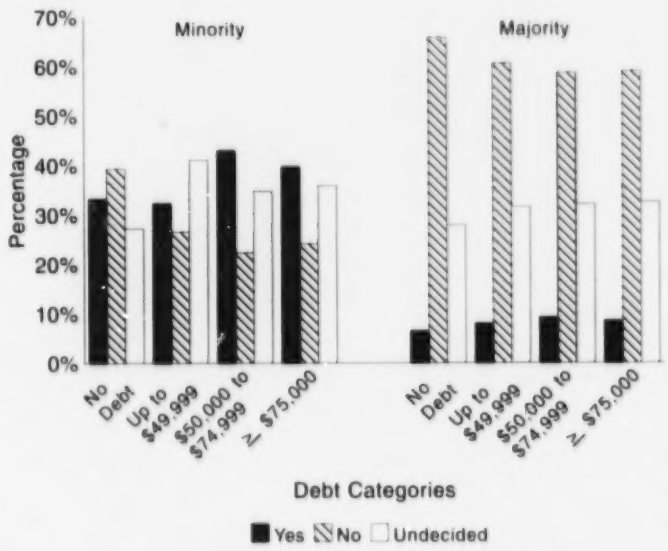


Figure 40. Percentages of 1992 minority and majority graduates intending practice in socioeconomically-deprived areas, by categories of indebtedness. (Minority and majority as defined in Figure 37.) *Source:* 1992 AAMC Medical School Graduation Questionnaire.